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CONTENTS AND SUBJECT INDEX

Absorption from the Lower Respiratory Tract Under Normal and Pathologic Conditions. H. J. Corper, M.D., Denver 1739

The Results of Diathermy in Pelvic Infections. Thomas H. Cherry, M.D., New York.....1745

Ankylosing Operations on the Tuberculous Spine: A Study of Fifty-Three Cases. Leonard W. Ely, M.D., San Francisco.....1748

Sporotrichosis: Report of Two Cases. Ralph M. Carter, M.D., Green Bay, Wis. 1751

Isacen (Guggenheim): A New Purgative. Max Einhorn, M.D., and Henry A. Rafsky, M.D., New York.....1754

Physiologic Effects of Spermatoxin in Rats, Rabbits and Guinea-Pigs. Robert M. Oslund, Ph.D., Chicago.1755

Importance to the Practicing Ophthalmologist of Contributing to Literature. Arnold Knapp, M.D., New York 1759

The Treatment of Thrombo-Angiitis Obliterans by Intravenous Injection of Hypertonic Salt Solution: Preliminary Report. Samuel Silbert, M.D., New York.....1759

Calcium Absorption from the Intestinal Tract in Human Subjects: An Experimental Study. Bernard S. Kahn, A.B., and Joseph H. Roe, Ph.D., with the Cooperation of A. S. Finkelstein, Washington, D. C.....1761

The Cautery Treatment of Chronic Endocervicitis. Carl Henry Davis, M.D., Milwaukee.....1763

Carbon Monoxide Poisoning Following Ethylene Anesthesia: Preliminary Report. William O'Neill Sherman, M.D.; Charles M. Swindler, M.D., and William S. McElroy, M.D., Pittsburgh 1765

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Diabetes Mellitus Associated with Status Lymphaticus. Ralph H. Major, M.D., and Ferdinand C. Helwig, M.D., Kansas City, Kan.....1766

A Convenient Pillar Retractor. Charles Everett Haines, M.D., New Rochelle, N. Y.....1767

SPECIAL ARTICLE

The Technic of Medication: Twenty-Third Article. Bernard Fantus, M.D., Chicago 1767

EDITORIALS

Diet and Hypertension in Renal Insufficiency 1770

Whisky—Then and Now.....1771

Tissue Reactions to Irradiation 1772

CURRENT COMMENT

Jute Dermatitis.....1772

Pies and Cake Forever!.....1773

Smallpox Takes Its Toll.....1773

(Subject Index on next page)

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Other SAUNDERS' BOOKS on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

Abdomen, laparotomy, Pfannenstiel's....ab-1811
Absorption from respiratory tract.....*1739
Achondroplasia ab-1805
Alcoholic injections to relieve pain.....ab-1796
Anaphylaxis, multiple ab-1805
Anemia of pregnancy.....ab-1810
pernicious, blood chemistry in.....ab-1811
pernicious, phagocytic cell in marrow..ab-1800
Anesthesia, ethylene ab-1802
ethylene, carbon monoxide poisoning after *1765
paravertebral ab-1811
Ankylosis surgery on tuberculous spine..*1748
Asthma ab-1809
sympathectomy and ab-1807
Atropine poisoning, Babinski sign in....ab-1806
Bacillus, Doderlein's vaginal.....ab-1801
Bacteria, influencing one species by another ab-1804
of actinomyces-like tonsillar granules.ab-1801
Bacterium tumefaciens ab-1810
Baths, hot, effect of.....ab-1797
Bile Ducts, cirrhosis.....ab-1795
Blood calcium *1761, 1783
calcium vs. ultraviolet rays.....ab-1798
cholesteremia in children.....ab-1804
counts in avitaminoses.....ab-1798
glucose isomer in.....ab-1798
picture vs. somatic processes.....1782
pictures, leukemoid ab-1794
platelet count in infants.....ab-1805
pressure, high, in renal insufficiency..E-1770
pressure, high, liver extract for.....ab-1794
pressure, high, vs. pregnancy toxemias..ab-1793
sugar in mother and fetus.....ab-1807
transfusion tests ab-1808
Bone angio-endothelioma ab-1799
formation in sarcoma.....ab-1799
interstitial growth in.....ab-1799
Book Notices.....**1788**
Books Received.....**1790**
Brain, cortex coefficient.....ab-1808
cortex freezing, produces toxin.....ab-1804
British Optical Convention.....1780
Cakes and pies forever.....E-1773
Calcium absorption from intestines.....*1761
Cancer, etiology of ab-1811
metastases ab-1810
mule spinners' 1780
radiotherapy ab-1805
rat, endocrines with ab-1811
research, ...1780, ab-1803
Roffo stain for ab-1806
tar, mitoses in ab-1810
Carbon monoxide poisoning after ethylene anesthesia *1765
Cautery, steam ab-1803
for chronic endocervicitis *1763
Celiac Disease due to pancreas.....ab-1806
Cerebellum cystic neuroglioma.....ab-1805
lesions, finger-nose test for.....ab-1812
Chancre of cervix.....ab-1797
Children and foreign languages.....1781
Cisterna, caffeine injection into.....ab-1811
Cold, bacteriology ab-1800
Constitution and motor function.....ab-1807
Correspondence **1785**
Crystalloid absorption *1739
Deafness, partial, treatment of.....ab-1808
Deaths **1784**
Diabetes Mellitus from cholecystitis....ab-1801
status lymphaticus in.....*1766
Diathermy in pelvic infections.....*1745
Diet in renal insufficiency.....E-1770
Diphtheria, treatment, serum.....ab-1803
Diuresis, test, and theobromine.....ab-1811
Edema fluid, absorption, fatal.....1783
Encephalitis, chronic, pathology.....ab-1799
epidemic, blood sugar in.....ab-1803
Endarteritis, syphilitic, in children.....ab-1795
Endocarditis, infectious ab-1811
lenta ab-1809
Erythema infectiosum ab-1795
Erythrocytes, size of ab-1812
Eugenics, sterilization, statute valid....Ml-1790
Exercise vs. blood and urine phosphates..ab-1802
Fasciola hepatica, host.....ab-1803
Fever, peptidases in.....ab-1809
Foreign Letters.....**1780**
Fractures, treatment ab-1807
Furunculosis, treatment ab-1809
Gallbladder, inflammation.....ab-1801, ab-1811
surgery, irrational, repair after.....ab-1808
Goiter and Chagas' disease.....ab-1809
Government Services.....**1779**
Guacarapa fever ab-1806
Habitus and psychiatry.....ab-1809
Harrison Narcotic Act, incubus....1778, C-1786
Heart disease and thyroid tumors.....ab-1799
block, syncope in.....ab-1793
disease in New England.....ab-1792
rheumatic, electrocardiograms in.....ab-1803
Hemoptysis, artificial, vs. lung.....ab-1794
Hemorrhages, experimental visceral....ab-1802
Hernia, strangulated ab-1799
Herniotomy, blunders in.....ab-1810
Hip Joint, disarticulation of.....ab-1807
Hospitals, postmortem records.....C-1785
Hydronephrosis, experimental ab-1798
Ileum, multiple atresia of.....ab-1797
Injections, intracavernous ab-1809
Insanity from kidney disease.....ab-1796
Insulin complement ab-1812
for recurring gastric ulcer.....ab-1804
Internal Medicine, Congress of.....1782
Intestines, calcium absorption from.....*1761
Intussusception ab-1803
Iodine hidden in drugs.....ab-1809
Iron preparations, "organic".....ab-1808
Isacen *1754, 1769
Jute dermatitis E-1772
Kahn Precipitation Test ab-1806
Kidneys and syphilis.....ab-1812
insufficiency E-1770
transplant, autogenous ab-1796
transplant, homogenous ab-1796
tuberculosis ab-1807
Labor, bearing down efforts.....ab-1811
hemorrhage, and placental infarct....ab-1802
manual rotation of fetus.....ab-1797
Laryngoplasty ab-1809
Leukemia, acute ab-1796
Liver, amebic abscess ab-1806
disease, chronic interstitial.....ab-1795
extracts vs. hypertension.....ab-1794
fatty degeneration and tetany.....ab-1806
Lungs, edema, production ab-1802
edema, acute suffocative ab-1802
Lymph Nodes, tuberculous adenitis.....ab-1803
Lymphatism in diabetes.....*1766
Lymphogranuloma, Dorothy Reed cell in...1786
Malpractice, liability of medical school..Ml-1791
Marriages **1784**
Medical Education, Registration.....**1787**
Medical Practice Act, chiropractic, evidence of licensure Ml-1791
indictment, necessary averments.....Ml-1792
Medication, technic *1767
Medicolegal **1790**
Meetings, Coming Meetings.....**1792**
Meninges, hemorrhage ab-1812
Meningitis, juvenile ab-1809
Metal salts therapy ab-1812
Milk, human, vs. smoking.....1787
Mononucleosis, infectious ab-1796
Myeloma, endothelial ab-1798
Necropsy records of hospitals.....C-1785
Neo-glucose ab-1812
Neurotoxin ab-1804
New and Nonofficial Remedies.....**1769**
News **1774**
Numerus clausus in Roumania.....1782
Omentum C-1785
Ophthalmologist, literary efforts.....*1759
Orchiepididymitis, tuberculous ab-1806
Osteopaths, pushing, England.....1780
Otitis Media, facial paralysis in.....ab-1808
Ovary, intra-uterine grafting.....ab-1805
Pancreas regenerated ab-1797
Paralysis, facial, in otitis.....ab-1808
general, incipient ab-1796
intestinal, nicotine injections for.....ab-1809
Paratyphoid, differentiation ab-1806
in infant ab-1795
Pelvis, infections, diathermy in.....*1745
Peptic Ulcer, recurring, insulin in.....ab-1804
Pies and cakes forever.....E-1773
Placenta, infarction, and hemorrhage...ab-1802
Pleura, absorption from.....*1739
effusions vs. artificial pneumothorax..ab-1799
Pneumococcus, serology ab-1809
Pneumothorax, artificial, warning.....ab-1806
artificial vs. pleural effusions.....ab-1799
Pons lesion, from anesthesia.....ab-1803
Pregnancy and rectal cancer.....ab-1807
chlorosis and anemia in.....ab-1810
diagnosis ab-1810
diagnosis by stethoscope.....ab-1797
extra-uterine, full term.....ab-1797
metabolism increased in.....ab-1805
rectal vs. vaginal examination.....ab-1810
shock in ab-1797
syphilis in ab-1807
toxemias ab-1793
vomiting of, vs. urine.....ab-1802
Privileged communications, disclosures affecting character Ml-1791
Pseudohemophilia, hereditary ab-1812
Psychiatry and habitus.....ab-1809
Psychoses, hammock treatment.....ab-1805
Pubis, rami fracture of.....ab-1801
Puerperium, shock in.....ab-1797
Pulse, positive centrifugal venous.....ab-1796
Purpura, fulminating ab-1803
Pyelitis, proteus, hexylresorcinol in....ab-1800
Queries and Minor Notes.....**1788**
Radiations, tissue reactions to.....E-1772
Raynaud's disease ab-1796
Rectum, administration by cancer and pregnancy.....*1767
Religious epidemic in Russia.....ab-1807
Respiratory Tract, absorption from.....*1739
Reticulo-Endothelial system 1786
Retractor, convenient pillar.....*1767
Rheumatism, specific character.....ab-1804
Rhinitis, vasomotor, iodine in.....ab-1809
Rockefeller Foundation gift.....1781
Rocky Mountain fever.....ab-1806
"Royal Hospitals": "spital sermon".....1781
Saliva, ammonia nitrogen coefficient ab-1795
Salt solution in thrombo-angiitis *1759
Scrofula, prognosis of.....ab-1808
Serum, Møllgaard's ab-1808
Sex education 1783
Shell shock 1786
Shoulder, dislocation, habitual ab-1812
Signs, visibility of.....1787
Smallpox takes its toll.....E-1773
Smoking, effect on breast milk.....1787
Society Proceedings.....**1782**
Spasm, prolonged, after trauma.....ab-1811
Spermatoxin *1755
Spine, tuberculous *1748
Splenectomy, mortality of.....ab-1796
Sporotrichosis *1751
State Board Examinations.....**1787**
Stomach, extirpation of roadway in.....ab-1808
motor disorders ab-1809
normal, response to food.....ab-1796
secretion vs. thyroid extract.....ab-1797
Streptococcus, biology of.....ab-1800
Suppositories *1768
Suprarenal transplantation ab-1798
cortex, hypertrophy ab-1800
Surgeons, letters of historical interest...ab-1810
Surgery, blunders in ab-1810
Sympathectomy and asthma.....ab-1807
Synovitis of knee.....ab-1810
Syphilis and kidneys.....ab-1812
in pregnancy ab-1807
of third generation ab-1805
reinfection in tabes ab-1805
Tabes Dorsales, treatment ab-1809
Testicle, cancer ab-1803
Tetanus, carriers ab-1800, ab-1801
immunity to ab-1800
Tetany and liver lesions.....ab-1806
infantile 1786
Thrombo-angiitis obliterans *1759
Thymus graft, autoplastic ab-1800
Thyroid extract vs. gastric secretion....ab-1797
tumors and heart disease.....ab-1799
Tissue freezing, toxin from.....ab-1804
reactions to irradiation.....E-1772
Tonics and Sedatives.....**Adv. page 22**
Tonsillectomy, convenient pillar retractor..*1767
Tonsillomycoses ab-1801
Transplantation after blocking.....ab-1808
Trypanosomiasis and goiter.....ab-1809
Tubercle Bacillus vaccine.....ab-1799
Tuberculosis, diagnostic culture.ab-1809, ab-1810
Tumor from pityrol.....ab-1811
cells vs. irradiation.....E-1772
in fish ab-1811
resistance vs. fatty acids.....ab-1811
susceptibility and heredity ab-1800
Typhoid carriers, prevalence of.....ab-1798
Lesieur's symptom in.....ab-1805
vaccine treatment ab-1804
Typhus, convalescents' serum in.....ab-1804
Urethritis, gonorrheal, diathermy in.....*1745
Urine, creatinine, of infants.....ab-1795
incontinence, surgery for.....ab-1812
sugar test, error in.....ab-1811
uric acid, of infants.....ab-1795
Uterus, cancroid, experimental.....ab-1810
endocervicitis, cautery treatment.....*1763
infections, diathermy in.....*1745
retroflexion and accident ab-1810
soapy water injection causes peritonitis..ab-1812
Vagina bacteria, virulence ab-1807
fetal, glycogen in ab-1807
Vulvovaginitis in children.....ab-1808
Wassermann Test ab-1800
Whisky—then and now.....E-1771
Zinc stearate poisoning, fatal.....ab-1795

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ABSORPTION FROM THE LOWER RESPIRATORY TRACT

UNDER NORMAL AND PATHOLOGIC CONDITIONS *

H. J. CORPER, M.D.
DENVER

The problem of absorption confronts the scientific investigator in practically every field of human endeavor, in the exact as well as in the practical fields, and the mass of information thus gained will eventually lead to a more intelligent understanding of the detailed mechanism of absorption, though widely differing especially in the finer points in each special field. The inadequacy of in vitro explanations alone for biologic purposes is now and again emphatically decried by some students and with some justification, so that it would seem that the final court of decision must at present still rest in tests performed under actual existing in vivo conditions. In the biologic and medical sciences, our problem resolves itself into the solution of a complicated mechanism at the basis of which lies the intricate biology of the cell, the complexities of which we are just beginning to unravel by means of controlled researches. In many respects one should not expect absorption in the lower respiratory tract to differ from that in other parts of the body, yet the anatomic structure as well as the specialized physiologic function of this part of the human economy would certainly make one hesitate in accepting all facts derived from alien studies and applying them without reservation to the respiratory organs.

Besides the specialized differences of the cells concerned in absorption in a certain part of the body, due weight must also be given the physical and chemical nature of the substance being absorbed, whether gaseous or liquid, and in the latter case whether in solution, as crystalloid or colloid, or in suspension as particulate matter. The latter, being the more easily adjusted factor for study, has probably been given greater consideration than the tissue or cellular phase. Since gaseous exchange is one of the most significant physiologic functions of the lungs, this problem has been given major consideration, as is evident from the scientific literature on the subject, and justly so; yet there remains considerable importance attached to the subject of absorption of liquids when it is considered that the cells themselves under physiologic conditions are in a liquid state and all interchange with the outside world occurs through a liquid medium, and that under pathologic conditions the changes occurring concern to a great extent those involving the liquids of the tissues.

After the discovery of the blood and lymph circulations, interest was displayed in the proportionate parts played by these in the absorption of fluids, both normal and pathologic, and the peritoneal and pleural cavities were regarded as integral parts of the lymphatic system, though the manner of absorption of contained fluid was not clear. In 1862, the announcement of von Recklinghausen [1] that there existed open channels or stomas which established communication between the peritoneal cavity and the lymphatic system afforded a ready explanation for the absorption of fluids. Almost coincident with the refutation of the existence of stomas, Starling and Tubby,[2] in 1894, as a result of a study of the resorption of dyestuffs, peptone, proteins, sugar and salt solutions, concluded that the resorption occurred primarily through the blood vessels, in which Orlow, Heidenhain (1896) and Hamburger (1895) concurred. The latter believed that isotonic solutions were absorbed by imbibition. MacCallum,[3] in 1903, was responsible for our more rational understanding of the manner of absorption of foreign granules from the pleural and peritoneal cavities by a very slow reactive process of phagocytosis, thus stressing the importance of the cell in absorption.

The route of absorption from the serous cavities is by way of the blood and lymph vessels; and although the former are at present described in complete detail and are common knowledge, the latter are just being satisfactorily studied, and a brief review of our present anatomic information seems justified. All lymphatic vessels at their termination empty into veins, and on both sides of the body where the subclavian and common jugular veins unite. All tissue fluids and lymph from the left half of the head, the neck, the left upper extremity, the left chest, the left lung, left heart, the mediastinum, the entire abdomen, diaphragm and the greater part of the liver flow into lymph vessels emptying into the thoracic duct, while those from the right half of the head and neck, right upper extremity, right chest, right lung, right heart and a part of the liver surface flow into the right lymphatic trunk. Anastomoses between the right and left chest and those of the abdomen probably exist.

The absorption of liquids is intimately associated with the absorption of substances dissolved in them as well as the state of their solution, whether crystalloid or colloid, hypertonic, isotonic or hypotonic, but

* From the Research Department, National Jewish Hospital.
* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Von Recklinghausen: Die Lymphgefässe und ihre Beziehung zum Bindegewebe, Berlin, 1862; Virchows Arch. f. path. Anat. **26**: 172, 1863.
2. Starling, E. H., and Tubby, A. H.: On Absorption from and Secretion into the Serous Cavities, J. Physiol. **16**: 140, 1894.
3. MacCallum, W. G.: On the Mechanism of Absorption of Granular Matter from the Peritoneum, Bull. Johns Hopkins Hosp. **14**: 105, 1903.

the immediate and direct course of the absorption of liquids as solutions of crystalloids or colloids is difficult to follow unless the contained crystalloids or colloids [4] happen to be colored, can be tested by color reactions or precipitates, or are in the form of unchangeable dyestuffs originally. Most dyestuffs are, however, susceptible to reduction or oxidation changes in the body, and therefore absorption has been studied to a great extent by utilizing very fine suspensions of stable particulate matter which can be directly followed step by step, especially under the microscope. Thus developed the concept of the endothelial leukocyte by Mallory,[5] who in 1898 described the phagocytic mononuclear cells in the lymph nodes in typhoid. Aschoff and Kiyono now include these cells in their class of reticulo-endothelium with which are now identified the mononuclear cells of the blood stream. Finally, Sabin and Cunningham,[6] by supravital methods, have again rendered the term reticulo-endothelium meaningless and conclude that the endothelial leukocyte of Mallory, the histiocyte of Aschoff and Kiyono, the macrophage of Evans and the clasmatocyte of Sabin are identical but differ in origin from the monocyte of Sabin and Cunningham derived from the reticular or mesenchymal

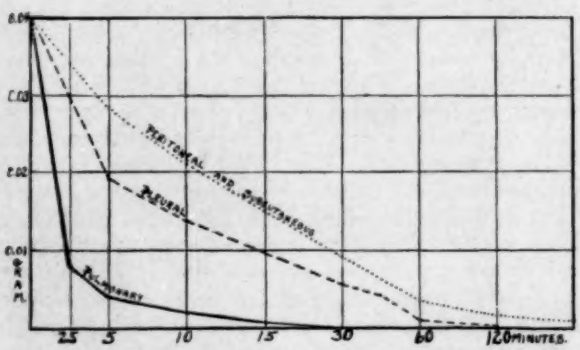

Fig. 1.—Absorption of 2 cc. of 2 per cent sodium sulphocyanate solution after intrapulmonary, intrapleural, intraperitoneal and subcutaneous injection into normal guinea-pigs. The pulmonary rate of absorption exceeds the pleural, and the latter exceeds that from the peritoneal cavity or subcutaneous tissues.

cell, whose primitive stem-cell is also the parent cell from which the leukocytic and lymphocytic series of cells are derived. In a consideration of absorption, especially of particulate matter, the origin and destination of the cells concerned become very pertinent, and its importance in the absorption of certain crystalloids and colloids must not be casually dispensed with, especially since it is generally accepted that these must also pass through cellular protoplasm to enter the blood or lymph vascular systems for final disposition. It has been difficult even to trace accurately the course of liquid suspensions of particulate matter far beyond the site of primary injection, but a review of a few recent studies will serve to elucidate this from the standpoint of our present knowledge of the lung and pleura.

Karsner and Swanbeck,[7] in studies on cats with carmine and carbon suspensions, found that particulate matter in the pleura is taken up by endothelial cells in situ, and is transported in endothelial cells rather than as free pigment. The surface cells that participate are determined by the position of the pigment; but, other things being equal, the parietal pleura appears to be somewhat more active than the visceral pleura. The surface endothelium after phagocytosis may migrate to the underlying lymphatics, and the cells in the sinuses of lymph nodes are largely migratory cells. The phagocytic power of the cells is a primitive function existing after the death of the animal as well as during a period of spinal shock. Drainage from the parietal pleura is chiefly into mediastinal lymph nodes, whereas that from the visceral pleura is principally into the lymph nodes at the hilum of the lung. Transport from the visceral pleura is in part through the subpleural and in part through the peribronchial and perivascular lymphatics. Occasional transfer of pigment to the abdominal lymphatic apparatus was noted, but this was by no means either constant or frequent.

Lyter,[8] in experimental studies on guinea-pigs, rabbits and sheep, wished to determine the probability of particulate material (india ink) passing from the mediastinum into the substance of the lungs and the probability of its passing from the pleural surface into the lung, without concern with the question of the pathways. India ink injected into the mediastinum passed into the lung substance and into the spaces beneath the parietal pleura, while india ink injected into the right pleural cavity also passed into the lung substance on both sides as well as into the tissues of the mediastinum and beneath the parietal pleura on each side. No pigment was found beneath the diaphragmatic pleura or in the liver or spleen.

Bettman,[9] working with dogs and rabbits, found that india ink injected into a normal pleural space left an unstained visceral and parietal pleura, while the intracostal and superdiaphragmatic lymph channels were deeply pigmented, and the mediastinal and hilum glands contained large amounts of carbon. In rabbits injected with air and india ink there was a striking difference in that the carbon remained as a thin film on both the parietal and visceral pleurae, and the lymph channels and nodes were less injected.

In order to learn something of the modus operandi of the removal of an exudate from the pleural cavities, Wadsworth [10] performed experiments on dogs, cats and rabbits. India ink, milk and carmine in Ringer's solution were injected into the pleural cavity and could be traced in the parietal pleura and to a less extent in the visceral pleura, both in the living anesthetized animal and in the dead animal in which artificial respiration had been maintained for some time (from one to two hours). It is concluded by him that particulate material finds easy access to the lymphatics of the parietal pleura, and not by phagocytosis. The lymphatics of the visceral pleura were not so markedly filled as those of the parietal pleura, and here and there phagocytosis was observed. The fact that the substernal and hilum glands contained pigment even in the dead animals on which artificial respiration had been performed is presented as conclusive evidence that respiratory movements alone can act as an adequate pump for these lymphatics.

4. The terms crystalloid and colloid are used with reservation and the knowledge that when substances are introduced into the body they enter a complex physicochemical colloid system in which their true state may be altered either by physical or by chemical combination, and that, as Fischer (Handbook of Colloid Chemistry, 1915) states, "all substances can appear as colloids under appropriate conditions."

5. Mallory, F. B.: Histological Study of Typhoid Fever, J. Exper. Med. **3**: 611, 1898.

6. Cunningham, R. S.: The Physiology of the Endothelial Cell, Especially Its Permeability Under Normal and Pathological Conditions, Am. Rev. Tuberc. **9**: 491 (Aug.) 1924.

7. Karsner, H. T., and Swanbeck, C. E.: The Removal of Particulate Matter from the Pleura, J. M. Res. **42**: 91 (July-Sept.) 1920.

8. Lyter, J. C.: The Pathways of the Mediastinum, the Lungs and the Pleurae, Am. J. M. Sc. **168**: 882 (Dec.) 1924.

9. Bettman, R. B.: The Reaction of the Pleura to Particulate Matter, Especially in the Presence of Pneumothorax, Arch. Surg. **10**: 523 (Jan. pt. 2) 1925.

10. Wadsworth, T. W.: A Mechanism Maintaining the Negative Pressure of the Pleura and Influencing Absorption, J. Path. & Bacteriol. **25**: 266 (April) 1922.

The disposition of particulate matter in the lung follows definite routes into the lymphatics converging to the hilum, which have been exhaustively worked out by Klotz, Haythorn and others in conjunction with studies on anthracosis, and hardly bear repetition here, as they are common knowledge and the literature has already been summarized.[11]

It may seem a far step between the route of absorption of particulate substances and that of crystalloid and colloid solutions, and yet opinion is still divided as to how far absorption of the latter solution is primarily along lymphatic or blood vascular channels. In concurrence with the views of Starling and Tubby (1894), Heidenhain (Orlow, 1895) and Mendel (1898), Dandy and Rowntree[12] in 1914 concluded that absorption of fluids was primarily into the blood and not into the lymphatics. They studied the absorption of fluids (isotonic salt solution containing phenolsulphonphthalein) from the normal peritoneal and pleural cavities in dogs, and conclude that there is a very active absorption of fluids from all parts of the normal peritoneal and pleural cavities, which is essentially hemic and not lymphatic. Peritoneal absorption is practically equal in all postures except pelvis down, in which it is 15 per cent less than other postures; likewise, pleural absorption is 13 per cent less in pelvis down than in other postures.

Although not concerned with absorption from the lower respiratory tract but rather with absorption in the body in general, Putnam[13] devised an ingenious experiment, using the peritoneum of rabbits, cats and dogs in the living intact animal, and he repeatedly thus dialyzed flowing blood against indifferent fluids. Dialysates thus obtained varied according to the fluid employed; but, in general, they contained a trace of protein matter and crystalloids occurring naturally in the blood plasma or artificially introduced into the circulation.

Under certain conditions, fluids in the peritoneal cavity can come into an apparently complete osmotic equilibrium with the blood plasma. The speed of diffusion of different molecules varies inversely with their respective sizes. Colloids in general are not transmitted from the blood stream into fluids in the peritoneal cavity. Colloids in solution are, however, absorbed from the peritoneal sac, although not as rapidly as crystalloids. Changes in volume of hypotonic and hypertonic solutions occur in the direction that might be predicted from a consideration of osmotic forces at work, but never to exactly the extent demanded by the theoretical laws of pure osmosis. Absorption into the blood stream is always greater than the expected diffusion from the peritoneal cavity, and sometimes very much greater.

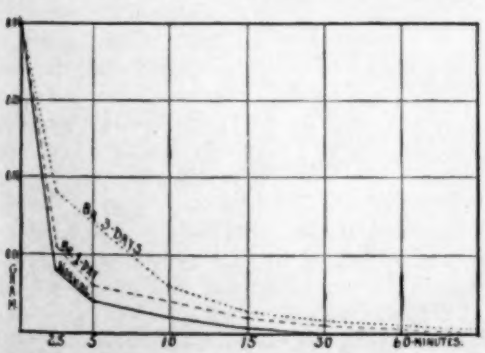

Fig. 2.—Retardation of the absorption of 2 cc. of 2 per cent sodium sulphocyanate solution in the lungs, one and three days after gassing with bromine that resulted in an acute pneumonitis.

It is concluded that while the major part of the transfer of crystalloids to and from the peritoneal cavity may be explained as being due to a simple colloidal membrane, the presence of another pathway, capable of transmitting colloids and particles as well as true solutions, and oriented only away from the peritoneal sac, must be predicated. Whether this second mode of transmission is due to some form of "vital activity" (phagocytosis, potocytosis) or whether it is due to simple mechanical filtration through intercellular spaces, actual or potential, of appropriate size, is still obscure.

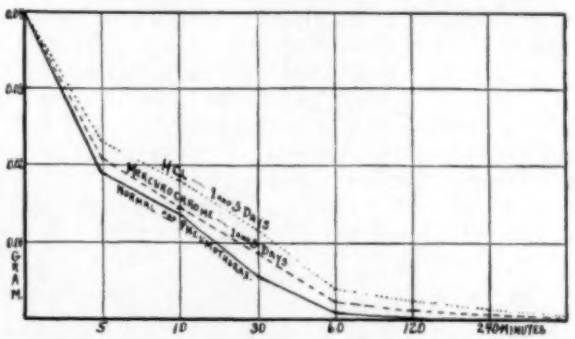

Fig. 3.—Retardation of the absorption of 2 cc. of 2 per cent sodium sulphocyanate solution in acute pleuritis. The inflammatory reaction was greater after 2 cc. of 0.2 per cent hydrochloric acid solution than after 2 cc. of 0.2 per cent mercurochrome solution. In pneumothorax, no retardation was apparent as compared to normal.

The exclusive hemic route of absorption of crystalloids and lymphogenous route of colloids is chosen by two recent investigators. Katsura[14] studied the absorption of aniline dyes in the normal peritoneal and pleural cavities of rabbits and dogs, and concludes that crystalloid dyes are, even in powder form, rapidly resorbed by the blood stream, dependent on the amount introduced. Colloidal dyes are resorbed much less rapidly and by the lymph stream. The lymph vessels of the peritoneum are not exclusively emptied into the thoracic duct but partly into the right lymphatic duct. The lymph paths of the right pleura are not to the right lymphatic duct but, like that of the peritoneum and left pleura, mainly to the thoracic duct. In addition to absorption of crystalloids and colloids under normal conditions in the peritoneum and pleura of dogs, less so in rabbits, guinea-pigs and white rats, Notkin[15] also studied absorption from those serous surfaces under experimental pathologic conditions. He found that crystalloid salt solutions are primarily absorbed by the blood vessels, and believes that the lymph vessels may take some part in this. The absorption in the living animal is dependent on physicochemical factors (diffusion, osmosis, etc.), but vital factors play a part in that these substances act as a foreign substance and cause a reaction which is absent in dead tissues. Hemoglobin injected into the blood stream appeared in the urine in twenty-seven minutes; injected into the serous cavities

11. Corper, H. J.: Pulmonary Aspiration of Particulate Matter, Normally and During Anesthesia, J. A. M. A. **78**: 1858 (June 17) 1922.
12. Dandy, W. E., and Rowntree, L. G.: Peritoneal and Pleural Absorption, with Reference to Postural Treatment, Ann. Surg. **59**: 587, 1914.
13. Putnam, T. J.: The Living Peritoneum as a Dialyzing Membrane, Am. J. Physiol. **63**: 548 (Feb.) 1923.
14. Katsura, Shigehiro: Die Resorption der Farbstofflösungen aus der Bauch- und Pleurahöhle, mit besonderer Berücksichtigung des Ductus lymphaticus dexter, Tohoku J. Exper. Med. **5**: 294, 1924.
15. Notkin, J. A.: Die Aufsaugung in den serösen Höhlen (Die Bedeutung der Lymphgefässe), Virchows Arch. f. path. Anat. **255**: 471, 1925.

(peritoneum or pleura), they appeared in three hours forty-six minutes, and, injected into inflamed (by iodine potassium iodide solution) serous cavities, appeared in eight hours twenty-five minutes. It is concluded that the lymph vessels play an especially important rôle in the economy of the living animal since it is only through these vessels that the tissue fluids, like lymph, transudates and exudates are resorbed.

Aside from the early partially inexact studies by Grober[16] in 1901, from which he maintained that resorption from the pleura occurred by diffusion and osmosis as well as by respiratory movements (pumping system of the intercostal lymph vessels, pressure of the lung against the thoracic wall and the movement of the pleural surfaces against each other), and that resorption from the inflamed pleura is diminished, and a recent review of the literature with inconclusive personal experiments with many substances including various crystalloids, fats and lipoids, proteins, epinephrine, etc., in guinea-pigs by Jedlička[17] in 1924, there is just one other of recent date that is of value in a consideration of the absorption of liquids from the lower respiratory tract. This study was initiated by Winternitz and Smith[18] in the hope of utilizing the intratracheal route for the more direct application of therapeutic agents in pulmonary inflammatory conditions. While the main objective was not attained, it was found that the lungs would tolerate great quantities of fluid without untoward effects, and they were also led to challenge the significance of pulmonary edema as a cause of death. All the experimental work was done on normal dogs, and the material was introduced into the lungs by tracheal insufflation. It was found that 20 cc. per kilogram of body weight (from 200 to 450 cc. total volume) could be introduced into the lungs without evident harmful effect, and 30 cc. per kilogram merely overflowed back through the trachea. The fluid introduced found its way into the alveoli. Absorption from the lung was determined by noting the phenolsulphonphthalein excretion in the urine. After intravenous injection, the urine was positive in five minutes; after intrapulmonary, in thirteen minutes, and after intramuscular, in fifteen minutes. The absorption of 20 cc. of salt solution per kilogram of body weight from the lungs requires a considerable period of time. After eighteen hours much has disappeared, and within four days it has been absorbed without a trace. In the interim, however, and for several hours after insufflation, a degree of artificial edema is encountered which is greater than that when death is ascribed to this condition.

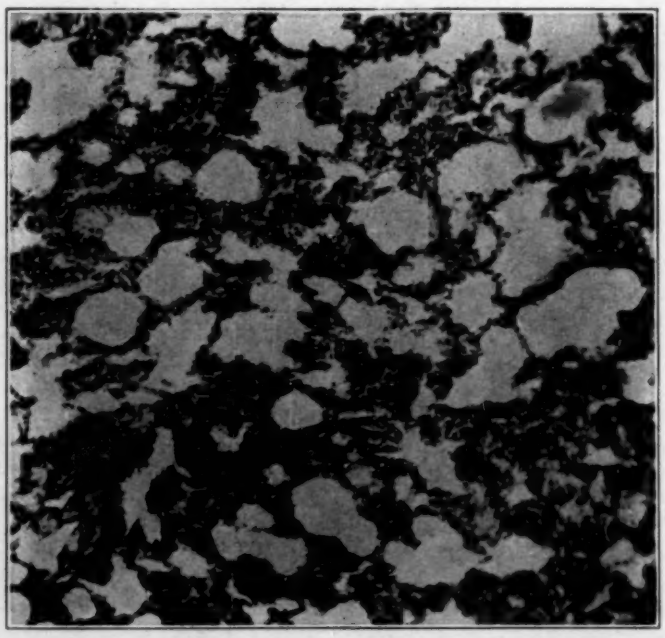

Fig. 4.—Pneumonitis three days after bromine gassing resulting in retardation of absorption (compare fig. 2).

Although Winternitz and Smith abandoned the possibility of washing out the lungs in acute inflammatory conditions in these organs on account of the danger of dissemination of infection and aggravation of the disease, it seemed advisable to obtain further information on the localization and absorption of liquids from the lower respiratory tract under different conditions so that this information might be further applied as a warning against dangerous procedures or might open the possibility of rational diagnostic or therapeutic methods. Earlier reports from the laboratory of the National Jewish Hospital have been concerned mainly with the pulmonary localization of particles suspended in the inspired air, or with aspirated and injected liquids containing particulate material.[19] The study to be reported below is concerned with the problem of the absorption of liquids from the lungs and pleura under normal and pathologic conditions. This problem has been touched on only saliently or indirectly by previous investigators. Initially it was hoped that aniline dyes might be utilized as an index of absorption, and as a preliminary step a number of crystalloid and colloid dyes, obviously of intense color, were tested by intracutaneous injection into guinea-pigs to determine the concentration tolerated by the tissues without visible injury and the rate of absorption from the local site. Of those tested, brilliant cresyl blue, neutral red, cresyl echt violet, scarlet M 00 and Victoria blue produced local ulcers in concentrations down to 0.5 per cent, while azorubin and rose bengal produced ulcers in 1 per cent and transient tissue changes in 0.5 per cent. Trypan blue and trypan red (both colloidal) produced a transient edema in 2 per cent concentration, but was without effect on the tissues in 1 per cent. The local color with both these dyes persisted as long as the twenty-fifth day, and by intraperitoneal injection 4 cc. of 1 per cent trypan blue colored a guinea-pig blue for twenty days.

Alkali blue produced a transient edema in 2 per cent solution, but was without detrimental effect on the tissues in 1 per cent, and the color persisted locally for more than one month. Vital red produced no appreciable tissue changes in 2 per cent, but its color would

16. Grober, J. A.: Die Resorptionskraft der Pleura, Beitr. z. path. Anat. **30**: 267, 1901.

17. Jedlička, Jaroslav: Experimentální prispevek k poznání absorpcni schopnosti dutiny pleurální, Cas. lek. cesk. **63**: 1281 (Aug. 30), 1319 (Sept. 6), 1345 (Sept. 13), 1386 (Sept. 20) 1924.

18. Winternitz, M. C., and Smith, G. H.: Intratracheal Pulmonary Irrigation: Contributions to Medical and Biological Research, Osler Memorial Volume **2**: 1255, 1919.

19. Corper, H. J., and Robin, H. A.: The Pulmonary Aspiration of Particulate Matter, Am. Rev. Tuberc. **8**: 813 (Nov.) 1922. Corper, H. J., and Freed, Harold: The Intratracheal Injection of Oils for Diagnostic and Therapeutic Purposes, J. A. M. A. **79**: 1739 (Nov. 18) 1922. Corper, H. J.: The Pulmonary Aspiration of Particulate Matter and Pulmonary Tuberculosis Produced Experimentally by Aspiration, Am. Rev. Tuberc. **8**: 386 (Dec.) 1923.

not permit satisfactory reading in the body. Indigo carmine and acid fuchsin, both crystalloid dyes, produced no appreciable tissue changes in 2 per cent concentration, rapidly faded within a few hours (to absence within twelve hours) and disappeared from the site of injection. The red color of acid fuchsin made it unserviceable for immediate identification in the body, even though satisfactory otherwise.

These preliminary tests made it obvious that only one dye—indigo carmine—would prove at all satisfactory for absorption tests if color, tissue tolerance and ready absorption were considered of importance. All white guinea-pigs were used, and the appearance of the blue color as determined by the bluing of the skin was used as an index to absorption from the lungs, pleura, peritoneum and subcutaneous tissues after the injection of a constant amount and concentration of the dye (indigo carmine) solution (2 cc., 2 per cent). An inconsistency arose, however, in the fact that the rate of absorption as determined by the appearance of the blue skin color regardless of the site of injection into the subcutaneous tissues was much more rapid than after intratracheal, intrapleural or intraperitoneal injection, although the pulmonary rate exceeded the pleural, and the latter the peritoneal.

Attempts to remedy the discrepancies by quantitative determinations of the dye in the blood serum at different intervals also proved insufficiently accurate. It was finally decided that the only accurate method of gaging the rate of absorption from a certain portion of the body would be to examine the site of injection itself and at regular intervals after injection. All attempts to work up a quantitative chemical method for determining the amounts of indigo carmine contained in tissues after injection proved unavailing, and dyes were discarded in preference to sodium sulphocyanate, which in intracutaneous tests proved to be without perceptible injurious effect on tissues in concentration as high as 2 per cent. The method of analysis briefly consisted of grinding the tissues (lung, etc.) in a mortar with sand, adding 30 cc. of 10 per cent trichloracetic acid solution, allowing the mixture to stand until the supernatant liquid is clear, and then filtering. The residue is washed several times and the entire combined filtrates diluted to 200 cc., and to 50 cc. there is added 0.7 cc. of 10 per cent ferric chloride solution and the color is compared with a standard in a colorimeter. In the case of pleural or peritoneal fluids, the spaces are washed out well with 100 cubic centimeters of water, and 30 cc. of 10 per cent trichloracetic acid is added and the procedure is continued as with lung. Since the rate of absorption of any foreign substance or fluid in the body or of extravasated pathologic fluids must be dependent on a number of factors, such as the volume, the concentration and the state and condition of the tissues in which absorption is taking place, it is advisable in experimental studies to unify and control as many of these factors as possible. This was done by using in all the studies reported here 2 cc. of 2 per cent sterile sodium sulphocyanate solution. Since absorption from various parts of the body is to a great extent relative and dependent on numerous variable factors, absorption from the lower respiratory tract was compared with that from the peritoneum and subcutaneous tissues. As previous observers uniformly found absorption not to vary appreciably from different locations and of different substances (crystalloids or colloids) in different species, the guinea-pig was chosen for this study.

The rate of absorption of 2 cc. of 2 per cent sodium sulphocyanate solution from the lungs (after intratracheal injection with the animal in the head-up position), pleura, peritoneum and subcutaneous tissues was determined by analyzing guinea-pigs at various intervals after injection, with the results graphically shown in figure 1.

Fig. 5.—Fibrinous pleurisy with effusion in pleuritis three days after the intrapleural injection of hydrochloric acid (0.2 per cent) resulting in retardation of absorption (compare fig. 3).

An examination of figure 1 reveals that the absorption of 2 cc. of 2 per cent sodium sulphocyanate solution from the lungs after intratracheal injection exceeds that from the normal pleural, peritoneum or subcutaneous tissues. How far the absorption from the lungs is responsible for the more rapid rate of absorption from the pleura over that of the peritoneum and subcutaneous tissues was not determined, although this, combined with the motility of the chest, may offer a possible explanation.

In order to determine the effect of acute inflammatory conditions in the lungs and pleura on absorption, a series of guinea-pigs was given injections of 2 cc. of 0.2 per cent hydrochloric acid and 2 cc. of 0.2 per cent mercurochrome-200 soluble [20] into the right pleura, and another series was given inhalations of bromine gas. The intrapleural injections of hydrochloric acid and mercurochrome were determined on in preliminary tests as being capable of producing a decided acute pleuritis without endangering the immediate life of the animal; nine of ten animals thus treated would easily survive for more than two weeks. The bromine exposures were given in a chamber about 2 by 2 by 3 feet in which from six to eight guinea-pigs were placed for hix hours and exposed to the vapors from 0.25 cc. of liquid bromine introduced at hourly intervals. This produced a variable acute pneumonitis from which the animals

20. Corper, H. J.: Pathologic Changes in Lung from Use of Mercurochrome-220 Soluble, J. A. M. A. **85**: 256 (July 25) 1925.

would gradually recover. An occasional guinea-pig would die shortly after exposure, but the majority of those surviving for one day would show no further general life endangering consequential effects. Bromine inhalations were used in preference to the intratracheal injection of liquids on account of its uniform effect on the lung in distinction to the irregular distribution of the changes occurring after the introduction of irritating liquids. The results of the absorption tests with 2 cc. of 2 per cent sodium sulphocyanate solution one and three days after the intrapleural injection of hydrochloric acid and mercurochrome, and bromine gassing are recorded in figures 2 and 3. For convenience of comparison, the normal curves of absorption for the lung and pleura are included in the charts.

An examination of figures 2 and 3 reveals a decided retardation of the absorption of the sodium sulphocyanate in acute inflammatory conditions of the pleura

Fig. 6.—Lung with fibrin deposits and pleuritis (same as figure 5).

produced by hydrochloric acid and mercurochrome, and of the lungs produced by bromine gassing one and three days prior to the absorption tests.

In order to note just how far this retardation of absorption from the pleura is due to the inflammatory condition itself or due to a separation of the pleural surfaces as a result of the extravasated fluid, the absorption of sodium sulphocyanate was tested shortly (from five to ten minutes) after the institution of artificial pneumothorax by right intrapleural injection of from 15 to 20 cc. of air, which produced a good compresssion. In the guinea-pig, this amount of air produced a bilateral pneumothorax. The pleurisy produced by hydrochloric acid and mercurochrome were also bilateral, so that the studies may be considered to cover the entire pleura of both sides of the chest instead of being monolateral as might be assumed from the injection into the right side of the chest. The graph of absorption of 2 cc. of 2 per cent sodium sulphocyanate solution from the pleura, as illustrated by the time and amount recovered, shows no appreciable change from the absorption noted from the normal pleura. This is illustrated in figure 3, the same absorption curve sufficing for the normal and pneumothorax animals.

It would seem from this study that resorption from the pleura primarily is dependent not on physical changes in the chest, such as occur in artificial pneumothorax, but rather on the grade and amount of inflammatory changes in the pleura. It is to be noted that the retardation of absorption in the hydrochloric acid pleuritis, which was of more severe grade, is greater than that in the mercurochrome pleuritis.[21]

SUMMARY AND CONCLUSIONS

The general problem of the absorption of liquids as applied to the medical sciences is intimately associated with the biology of the body cell, since all fluids and particulate substances passing into or out of the human economy or from one tissue to another do so through the medium of the cell; the existence of stomas as once maintained by von Recklinghausen being now denied. That the laws of osmosis and diffusion play an important part in absorption and resorption of liquids is in accord with present day conceptions, but there are certain unexplained "vital" factors concerned which require further elucidation. That phagocytosis is of primary significance in the absorption and transportation of particulate substances seems well established, but opinions are still divided, and justly so, as to the relative significance of the blood and lymph vascular systems in the absorption of crystalloid and colloidal substances. It seems well at present with the available scientific evidence to consider that both systems play a part in the absorption of both crystalloids and colloids, though the predominant part played in this may depend entirely on the individual circumstances in each case. Probably with most simple molecular crystalloids the main route of absorption is hemic, while with simple colloids it is along lymphatic channels. The difficulty in ascribing to either a specific absorptive function lies in our lack of knowledge of the physicochemical changes wrought in a substance passing through the tissue cells.

Absorption and resorption of liquids from the lower respiratory tract, the lungs and the pleura follow the main principles of absorption in other parts of the human economy, but the anatomic structure and physiologic function lend to these tissues differences that are still to be determined. The rapidity of absorption of crystalloids from the lungs and pleura exceeds that from the peritoneum and subcutaneous tissues. Absorption of crystalloids is more rapid from the lungs than from the pleura, and it is possible that absorption from the lungs in part accounts for the rapidity of absorption from the pleura. The rapidity of absorption of liquids from the lungs is probably to a great extent accounted for by the vascularity and large total surface of the terminal respiratory divisions, the alveoli.

The absorption of crystalloids by the pleura is not influenced by artificial pneumothorax instituted shortly before and resulting in a decided collapse of the lungs. Acute inflammatory conditions affecting the pleura, produced by chemical means (hydrochloric acid and mercurochrome), retard the absorption of crystalloids from the pleura. Acute inflammatory conditions affecting the pulmonary parenchyma, produced by gassing with bromine, retard the absorption of crystalloids from the lung after intratracheal injection. In the application of procedures to the lungs and pleura for diagnostic and therapeutic purposes, these facts must be borne in mind.

21. Drs. Max B. Lurie and Nao Uyei cooperated in the technical phases of this study.

THE RESULTS OF DIATHERMY IN PELVIC INFECTIONS *

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NEW YORK

The favorable results reported by Corbus, from the use of diathermy in the treatment of gonorrheal urethritis and endocervicitis, encouraged me to investigate its feasibility as a therapeutic agent in intrapelvic infections of the female. If satisfactory results could be obtained in urethritis and endocervicitis, it seemed logical to expect that it might prove equally efficient in adnexal disease of gonorrheal origin.

The principle on which the germicidal influence of diathermy depends in gonococcal infections is the generation of heat in the tissues, sufficient to destroy the vitality of the bacteria. It is a well known fact that the gonococcus dies after an exposure for ten minutes to 42 C., and whatever success diathermy has achieved in the treatment of this type of infection is due to this biologic alteration.

It may be said, by way of explanation, that diathermy is the application to the body of an electrical high frequency current that generates heat in the tissues between two electrodes. The degree of heat is controlled by the size of the electrodes, the amount of current utilized, the duration of the application, and the density of the tissues treated. The greater the density of the tissues traversed by the current, the greater the amount of heat developed. The resistance of tissues varies, according to their density, in the following order: bone, cartilage, ligaments, fascia, skin, muscle and fat. These are important factors when applications of diathermy are made, especially when higher degrees of heat are desired than those used in gonorrheal infections.

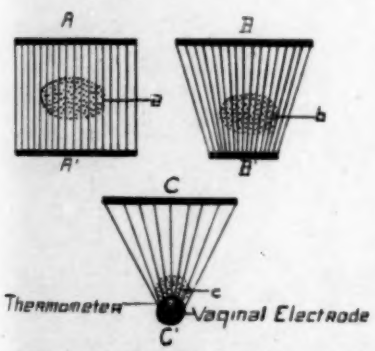

Fig. 1.—Maximum degree of heat with different size electrodes: *AA'*, two electrodes of similar size; *a*, location of maximum degree of heat midway between the two electrodes; *BB'*, electrodes of unequal size; *b*, maximum degree of heat nearer the smaller electrode; *C*, surface electrode; *C'*, vaginal electrode with the thermometer opening; *c*, location of greatest degree of heat.

The depth of heat penetration can readily be regulated by varying the size of the electrode (fig. 1). When two electrodes of equal size are used, the maximum temperature will be equidistant from them; when electrodes of different sizes are applied, the greatest degree of heat will be near the smaller one. It is therefore possible to localize any degree of heat at any depth by observing these principles. The amount of heat the normal tissues will tolerate before destruction or coagulation occurs probably varies between 55 C. and 58 C. I have applied diathermy through the abdomen of a dog, heating the bladder and rectum to 52 C., without the production of histopathologic changes. I have also applied 55 C. to the human cervix for ten minutes without any gross tissue changes following. We know definitely that tissue is destroyed at 60 C.

* From the Gynecological Division, Harlem Hospital.
* Read before the Section of Obstetrics and Gynecology, New York Academy of Medicine, Feb. 2, 1926.

Medical diathermy is a term applied when the tissues are heated within the boundaries of tissue toleration. Its effect is to produce a hyperemia that quickens the circulation so that the inflamed area treated receives more blood through the dilated capillaries. This brings about a reduction of the stasis in the engorged blood vessels and relief of pain from pressure on the nerve filaments. There also occurs a more rapid absorption of the exudate, for by the increased flow of blood to the pathologic site, a mobilization of the body's natural defenses takes place.

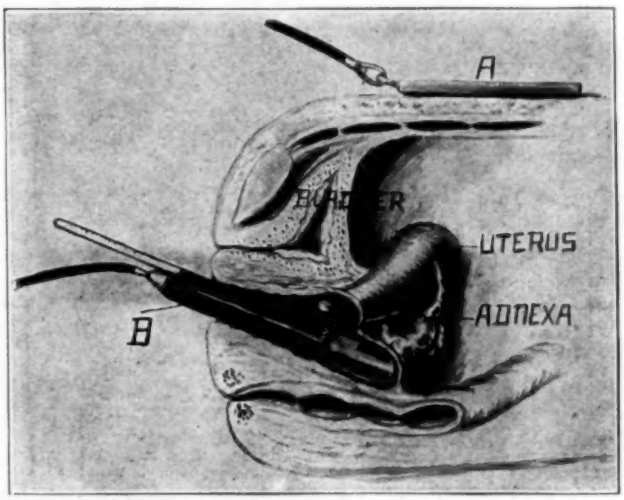

Fig. 2.—Abdominovaginal application of electrodes: *A*, abdominal water-cooled electrode; *B*, vaginal electrode, with the thermometer inserted, registering the temperature of the vaginal vault. The temperature of the adnexa is from 2 to 3 degrees C. greater than the vaginal temperature.

Surgical diathermy, or electrocoagulation, refers to the destruction of tissue by the utilization of degrees of heat above 58 C. This can be attained with any type of electrode, but the employment of one large and one small electrode is the usual method. By means of this therapy new growths or inflamed structures can be destroyed.

In the investigation of the therapeutic application of diathermy to intrapelvic infections, preliminary experimental work on the cadaver was done to ascertain where the maximum degree of heat would register with different types of electrodes.

Since the inflamed adnexa usually prolapse in the culdesac of Douglas, it seemed desirable to ascertain whether the maximum heat units could be concentrated in this area. Without relating the details of the experimental work, I may say that it was found that, with an abdominal electrode measuring 18 by 12.5 cm., and a vaginal electrode (the exposed active surface measuring 5 by 3 cm.), this region was readily heated to 46 C., while the vaginal temperature registered 44 C. A special electrode was made through which a hole was drilled near its surface to hold a thermometer, the bulb being exposed through a small window at the distal end. This allowed the bulb to come in contact with the vaginal vault (fig. 2). Through this contrivance, by adding 2 C. to the temperature registered in the vaginal tissues, the approximate degree of heat in the adnexa was estimated. This can only be approximate, because the amount of heat radiation by the circulating blood cannot be determined.

The question also naturally arose: What effect would prolonged maintenance of heat have on large pyosal-

pinges or tubo-ovarian abcesses? Electrotherapeutists and authorities on physiotherapy have stated that diathermy should never be used in cavities containing pus, in which no outlet was present for drainage, and have particularly cautioned against its use in the pelvic pathologic processes mentioned. In spite of these opinions, it seemed reasonable to assume that, if the gonococcus was the inciting factor producing such pelvic lesions,

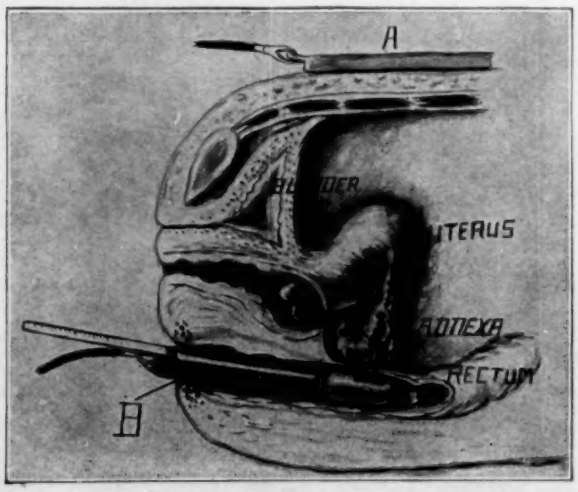

Fig. 3.—Abdominorectal application: *A*, abdominal water-cooled electrode; *B*, rectal electrode with thermometer. This method of application probably is the best for therapeutic purposes, but not so comfortable to the patient.

and that if a penetration of the diseased structure by heat to 42 C. could be attained, the causal agent would be destroyed, with an incidental reduction of the inflammation. Furthermore, the active hyperemia produced should aid in the rapid absorption of the products of infection and should promote resolution.

Acting on this assumption, 100 patients with adnexal disease were treated at the Harlem Hospital with diathermy. In all the patients the gonococcus was a causal factor of the disability. This was ascertained by positive urethral or cervical smears in most instances. In others whose smears were negative but contained numerous pus cells, it was assumed to be so, because there was a concomitant subacute or chronic urethritis, endocervicitis, skenitis or bartholinitis. The chief complaint on admission was abdominopelvic pain. This was due to either an initial adnexal infection or an acute exacerbation of a chronic inflammation. All patients had an accompanying endocervicitis; some had urethritis, Skene's duct involvement, or bartholinitis which, in my opinion, classed them as gonorrheal primarily.

The degree of pelvic involvement varied from small, thickened, tender adnexa to large pus tubes or tubo-ovarian abscesses that entirely filled the pelvis. In some instances the masses extended above the pelvic brim.

TABLE 1.—*Data of Adnexal Disease in One Hundred Patients*

Patients having adnexal disease without masses	23
Patients having adnexal disease with masses	77
Total number of cases	100

There were seventy-seven patients who presented pelvic or abdominopelvic masses; there were twenty-three patients without masses, but whose adnexa were thickened and tender.

Irrespective of the severity of the infection and the degree of pelvic pathologic change, diathermy treatments were instituted as a routine in all cases. The bipolar current was used throughout the entire series. The methods of administration employed were the abdominovaginal, abdominorectal (fig. 3) and abdominosacral application (fig. 4) of electrodes. The abdominovaginal application was made 139 times, while the sacro-abdominal route was utilized sixty-two times. The abdominovaginal application seemed the most practicable. It was attended with less discomfort to the patient than the rectal route; furthermore, it required less time and current than the sacro-abdominal route to produce the desired pelvic temperature.

The abdominovaginal application consisted of an abdominal electrode placed above the pubes, in contact with the skin, and a vaginal electrode, through which a thermometer was inserted, with the exposed surface placed behind the cervix, in contact with the vaginal vault. Sufficient current was utilized to raise the vaginal temperature from 42 to 43 C. (1,500 to 2,500 milliamperes). It was estimated that the maximum temperature in the inflamed adnexa was from 44 to 45 C. The current was then stabilized, and the temperature was maintained from fifteen to thirty minutes. The treatments were repeated at from three to five day intervals. As all these patients had a coexisting endocervicitis, the cervix was also treated, either at the same sitting, or at another time, with diathermy administered by the Corbus thermophore. Patients who had an associated urethritis were treated in a similar manner. These treatments consisted in applying an abdominal surface electrode and inserting the thermophore into the

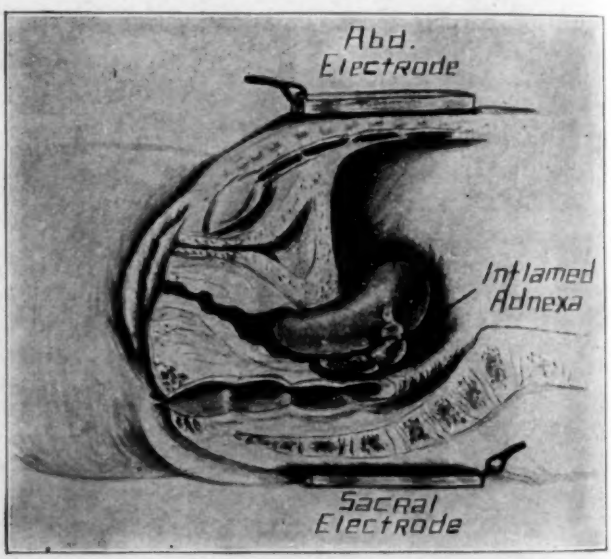

Fig. 4.—Application of abdominosacral electrodes. This method requires more current and longer time in order to obtain the desired temperature in the adnexa.

cervix or urethra (figs. 5 and 6). The amount of current utilized varied from 500 to 1,000 milliamperes. In the endocervicitis group, forty-eight patients were treated. Among these, twenty-four were cured or markedly improved, and twenty-four showed no improvement at all. My personal observation is that the application of low degrees of heat (from 42 to 43 C.) to the cervical canal is efficacious only in acute or subacute inflammations of the endocervix, not in the

chronic type. In the latter, it is preferable to destroy entirely the infected area by coagulation from the internal to the external os.

In the urethritis group, of thirteen patients treated, six were cured, six improved and one not improved. There were seven patients who received two or more diathermy treatments; of these five were cured, one improved and one not improved. This group, though too few in number for any definite conclusions to be drawn, at least causes one to believe that better results could be obtained by more frequent and longer applications of diathermy, as shown in the small subgroup of seven cases. I consider the clearing up of the lower genital tract infection important to prevent reinfection of the adnexa.

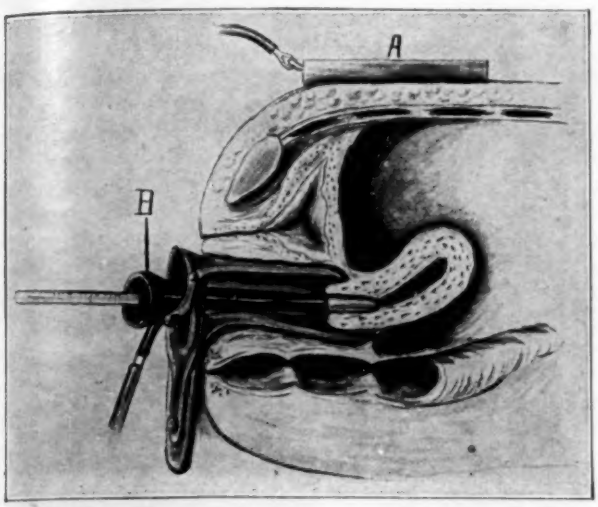

Fig. 5.—Application of diathermy in endocervicitis: *A*, abdominal water-cooled electrode; *B*, Corbus thermophore with thermometer registering the degree of heat in the electrode. The endocervical tissues register from 1 to 2 degrees C. higher than that indicated by the thermometer.

The most striking feature of the diathermy applications was the almost instant relief of pain in all cases. Among the seventy-seven patients who had pelvic masses, there was a disappearance of the masses in eighteen instances, and a reduction in the size of the masses in fourteen, making a total of thirty-two, or 41.5 per cent. The complete disappearance of the pelvic masses seemed more apt to occur in those having an initial attack of adnexal infection. While the tumefaction in chronic infections may be reduced in size, with rapid subsidence of the acute symptoms, the pelvic lesions remain as palpable structures, quiescent and innocuous. Such a result can be attained only by the prolonged use of diathermy. Of the seventy-seven patients having adnexal disease with masses, forty-nine were entirely relieved of symptoms, operation being unnecessary or refused by the patient.

TABLE 2.—*Data in Treatment of Patients with Adnexal Masses*

Patients with masses operated on	28
Patients with masses entirely relieved of symptoms; operation unnecessary or refused by patient	49
Total	77

On the twenty-eight patients whose adnexal masses persisted, following repeated diathermy applications, abdominal sections were performed. One cannot help but compare the operative findings in these patients with others of a similar nature who did not have preoperative diathermy. The pelvic structures appeared more hyperemic; they were soft, edematous and smooth; the adhesions were vascular and thin, not the thickened fibrous structures usually seen. Consequently, the masses were easily delivered with a minimum of trauma to important structures, and their rapid removal was facilitated. The contents of the masses consisted of a thin, watery, straw colored fluid, instead of the usual thick, creamy, purulent exudate. All cultures taken from the removed adnexa were negative.

The postoperative convalescence of this group was remarkably free from abdominal discomfort, pain, vomiting and distention. No doubt this was due to the lessening of operative trauma by the easy removal of the masses. Two wound infections occurred in the twenty-eight patients operated on, making 7.1 per cent, against 30 per cent wound infections in a large series that had no preoperative diathermy treatment.

I would like to emphasize that the results can be greatly improved in private practice and in institutions when more time can be allotted to each treatment. Many of these patients had only fifteen minute applications, while in private work thirty-five minutes is the minimum duration.

Regarding the uses of diathermy in pelvic infections produced by bacteria other than the gonococcus, my experience has been limited to three instances. In one postpartum case of three weeks' duration, with a pelvic mass of moderate size, one application of thirty minutes duration was made. Three hours later, severe abdominal pain with marked tenderness ensued, with a rise of temperature to 104, typical signs of acute pelvic peritonitis, and an abscess formation that necessitated posterior colpotomy. Another patient who had a severe postabortum pelvic infection and general peritonitis was given one diathermy treatment. This patient's condition was made worse, and she died shortly following the application. A third patient who had abdominopelvic masses of an obscure origin was given two diathermy treatments. The pain was increased in severity, and the masses increased in size. An abdominal section and pathologic examination revealed an actinomycosis of the abdominal parietal peritoneum. She made a good recovery.

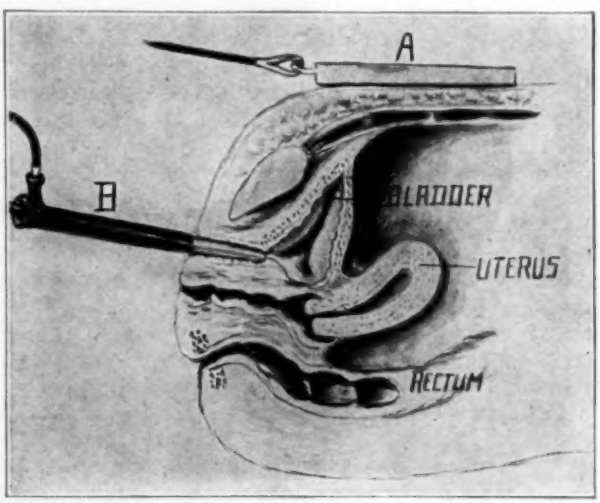

Fig. 6.—Application of Corbus thermophore, *B*, for gonorrheal urethritis; *A*, abdominal water-cooled electrode.

The specific bacteria responsible for most postpartum infections are the streptococcus, staphylococcus and the colon bacillus. These bacteria require from 58 to 60 C. of heat to render them inert. In view of the experiences I have described, I am led to conclude that when a much lower degree of heat is applied in the presence of such infections, not only does it fail to inhibit the pyogenic process, but also it produces a suitable cultural environment for the bacteria, and probably serves as a revivifying agent, which may incite an acute inflammatory process. It is true that these postpartum infections were acute in one case and subacute in the others. What the effect of diathermy would be in the chronic type of postpartum exudates is open to question.

CONCLUSION

I would venture to assert that diathermy is probably the most satisfactory available agent for the conservative treatment of pelvic infections due to the gonococcus. It relieves pain, diminishes the pelvic masses, and aids in complete resolution. Used as a preoperative therapeutic measure, it will eliminate many of the technical difficulties in the removal of large pelvic masses, and thereby contributes to a smoother convalescence. Incidentally, the percentage of postoperative wound infections is lessened.

580 Park Avenue.

ANKYLOSING OPERATIONS ON THE TUBERCULOUS SPINE

A STUDY OF FIFTY-THREE CASES *

LEONARD W. ELY, M.D.
SAN FRANCISCO

I have collected the histories of the patients with tuberculous spines who were operated on in the orthopedic clinic of Stanford University during the last twelve years, and to them I have added the histories of my private patients. A synopsis of the cases is given in the accompanying table.

The evaluation of any form of treatment is largely a personal matter. One who is content with an inspection of the outside of the body and never troubles to follow his cases to the mortuary and the laboratory can believe in the efficacy of any form of treatment. There are those who think that they can cure spinal tuberculosis by exposing their patients to sunlight. Twenty years ago, the same extravagant claims were made for the seashore of northern France as are made today for the sunlight in the mountains of Switzerland. My patients at the Sea Breeze Hospital at Coney Island, kept in the open air, were in excellent condition, but the course of their disease was not materially changed. Much the same may be said of the outdoor treatment carried out in any good climate. We are asked to believe that the sun's rays at a particular spot in Switzerland possess peculiar therapueutic virtue. I have never been able to detect any specific influence of California sunshine.

Until about twenty years ago the nonoperative treatment, by plaster of paris, by braces and by frames in recumbency, was practiced almost universally by those who treated many cases of spinal tuberculosis. No successful operation had ever been devised. Orthopedic surgeons stressed the value of these measures, and carried them out with meticulous care. Many of them follow the same course to this day. I was brought up in this school, and practiced the treatment for years. I worked in the clinics and hospitals of New York, enthusiastically at first, but with slowly lessening hopefulness, for about fifteen years. In all that time, watching other men's patients as well as my own hundreds of cases, I did not see as many cures as I have turned out in the fifty-three cases reported here. We would treat our patients for from two to five or more years, perhaps discharge them as cured, and then meet them in another clinic, or perhaps have them report back to us after a longer or shorter time, with a recrudescence of their disease. Such a thing as a cure without serious deformity was almost unknown. In spite of most painstaking care, we would be obliged to watch the development of an enormous hump. In the old days, we regarded Pott's disease in the adult as practically fatal. Occasionally, children recovered, but always with a large hump, which advertised the nature of their affliction to all throughout life. One seldom sees a typical "humpback" nowadays.

In spinal tuberculosis, as in other diseases, a choice of two methods is available in seeking a cure. By abstract reasoning one may evolve a theory, and then try it out on one's patients. This is pure empiricism, and is slow and uncertain. Its permanent good results in medicine can be counted on the fingers. Heliotherapy, drug treatment and external applications rest on this base. The other method is to accumulate facts, and then to attempt to reason from them to a cure. Let us apply this method to joint tuberculosis.

Fig. 1.—Stained slide of sagittal section of tuberculous lesion, comprising an epitome of spinal tuberculosis. Death occurred about six months after operation from intercurrent disease. The disease is in the stage of repair. The vertebra shows much calcification. The wedge shape, the bony bridge in the laminae, the trace of a cold abscess forming anteriorly, the tuberculous granuloma, under the posterior common ligament, bulging this out, and comprising the lumen of the spinal canal, may be noted. (Case of Dr. James T. Watkins.)

The cardinal symptoms and physical signs of joint tuberculosis are pain made worse by motion, muscular spasm, muscular atrophy, limitation of motion, and deformity in the sense of flexion contractures and subluxation. All these may be interpreted best as nature's effort to put the joint at rest. When we take the trouble to examine our specimens in the laboratory, we see the concrete evidences of this effort on nature's part. The tuberculous granulations in the bone marrow seem almost infallibly to seek the joint with a well defined purpose—to destroy it. The cartilage is perforated and killed; the granulation tissue unites with that from the other bone of the articulation and with that from the synovial membrane. The synovial membrane becomes thickened, and eventually little else but scar tissue. The joint becomes a mass of scar tissue, and as a working organ of motion is hopelessly injured. However, it is very rarely completely destroyed. Bony ankylosis

* Read before the surgical section of the San Francisco County Medical Society, Feb. 16, 1926.

is seldom if ever seen. Nature appears unable to form it in the absence of a secondary infection. Abscess formation, with secondary pus infection, is a frequent complication of joint tuberculosis. The joint then may be completely destroyed, but the risks of the disease are multiplied many times. The danger to life is great. The patient dies while nature is endeavoring to cure his disease. We note further that in the fibrous tissue in and about the joint, tuberculous foci may exist indefinitely, ready at any time to resume activity if they are set free, accidentally or with design.

We must throw out all the wild claims of wonder cures, and lay down our main rule of treatment, which is to deprive the joint of function.

How far shall we go in following this rule in the treatment of spinal tuberculosis? The nonoperative treatment is uncertain, takes years of time at best, and almost always is followed by marked deformity. Dissatisfaction with it, be it remembered, spurred orthopedic surgeons to devise something better, until Hibbs and Albee succeeded in ankylosing the spine. Hibbs got his idea from his observation of the fusing of the spinous processes in old specimens of spinal tuberculosis. In operating in such cases, one often notes this to a greater or less extent.

Fig. 2.—Specimen showing result of Albee operation. Patient died four years after operation, from hepatic cirrhosis. Necropsy showed disease in stage of healing. *A*, section of graft and spinous process removed for study. (Dr. McChesney's case.)

In the operative treatment, all the work is done on healthy bone, and at a considerable distance from the tuberculous portion. Hence, no danger of secondary infection exists. There remains, then, it seems to me, only the direct risk of the operation. This is very real without a skilled anesthetist. With one, it is almost negligible. We lost two patients on the table in our early work, the history of one of whom I have lost. We published the history of these two. Few other fatalities have been published, unfortunately. I have reason to believe that there have been many others.

Fig. 3.—Stained slide of section of graft, enlarged. The spongy bone is the spinous process.

The patient should be anesthetized on his face in a comfortable attitude, with cushions arranged so that his breathing will be unimpeded. When the operation is finished, the patient is rolled carefully onto the ambulance, and remains flat on his back for about a week before his wound is dressed. He is kept in recumbency for six weeks, though he may lie on his side or on his face after the first week. After this, he wears a spinal brace for about six months. Theoretically, a brace is not necessary after the establishment of the bony bridge, but we never know when the bridge is strong enough to support the strain to which it is exposed.

We prefer the Hibbs operation to the Albee, though it is much more difficult to perform. Theoretically it is better, for the bony bridge, once formed, is permanent, while anything may happen to a graft, sooner or later. On the other hand, the Albee operation is excellent in an early case in which the disease seems to be localized in one or two vertebrae. It is quickly done. I fancy it for lumbar disease. The disadvantage of the Hibbs operation is the frequent failure to establish bony union between two or more of the vertebrae operated on. Our statistics show a heavy percentage of second operations. The presence of one or more places of nonunion can be told by the persistence of symptoms, though it may be inferred from the roentgenograms. It is annoying to be obliged to do a second operation, but we almost always find the false joint when we do it. No one should assume an air of superiority in this matter. I have done the second operation on other men's patients as well as on my own. In some cases the operation fails because it has not been carried high or low enough.

Fig. 4.—Posterior aspect of spine in case 20, showing the bony bridge in the laminae, and its reinforcement by a bone graft.

The Hibbs operation is a poor one to do before the class. It requires careful dissection. When we attempt to hurry, we get into trouble.

The results of these operations, as to the deformity, are good. Usually, with proper postoperative splinting, the increase of the deformity is checked. Once in a while it goes on slowly increasing for a number of years, but not to any great extent. This is usually in disease of the thoracic region, in which already existing deformity puts too great a strain on the new bone.

In cases with secondarily infected tuberculous abscesses, the outlook is not particularly promising, but we have cases of recovery on record, one or two of them in adults. I think our statistics would be more brilliant if we picked our cases carefully, but we take them as they come. If the patient is able to stand the operation, and has no discharging sinus near the field of operation, we operate. Operation was adopted as the treatment of choice shortly after the orthopedic department was opened at Stanford some twelve years ago. At first in the case of young children, we tried nonoperative treatment, and operated only when this did not seem efficacious. Now we operate on patients of all ages.

Unlike the diagnosis of tuberculosis of other joints, the diagnosis of spinal tuberculosis is usually a tentative one. We are never absolutely sure of our ground, and our results might be questioned on this account. How-

Data in Fifty-Three Cases of Tuberculosis of the Spine Occurring in Clinical and Private Practice

No.	Date	Age	Sex*	Location	Complication	Operation	Result	Comment
1	1914	3	♂	7 T (abt)	.....	Hibbs.....	Death on table	
2	1914	4	♂	1, 2 L.	.....	Hibbs.....	Cure.....	Well, December, 1925
3	1915	5	♂	"lower T."	Tuberculous tarsus	Hibbs.....	Cure (1926).....	Cure of tarsus also
4	1915	6	♂	T - L	.....	Hibbs.....	Cure (December, 1925).	Operation done as last resort; child in very bad condition; second operation one year later
5	1915	6	♀	10-12 T, 1 L.	.....	Bone grafts.....	Cure.....	This was a second operation: a Hibbs had previously been attempted
6	1916	3	♀	6 T	.....	Hibbs.....	Cure.....	Bony bridge demonstrated at second operation
7	1916	26	♂	1-3 L.	Psoas abscess; tuberculous epididymitis; tuberculous rib	Albee.....	Failure	
8	1916	21	♂	12 T.	.....	Albee.....	Well one year later	
9	1916	8	♀	12 T - 1 L	.....	Albee, 2, Hibbs...	Cure.....	First operation not extensive enough; second operation enlarged area upward
10	1916	5	♂	2 L.	.....	Hibbs.....	Cure.....	Died of tuberculous meningitis seven years later following mastoid disease
11	1917	18	♂	11 T - 1 L	Tuberculous tarsus	Hibbs.....	Cure.....	Tarsus also well in 1925
12	1917	30	♂	4 L.	Pulmonary tuberculosis	Albee.....	Failure.....	The graft broke during the operation; patient unruly afterward
13	1917	31	♂	7 - 10 T.	.....	Hibbs.....	Death, meningitis, six weeks postoperative	
14	1917	23	♂	T. - L.	.....	Albee.....	Presumably well in 1919	Cannot be found in 1926
15	1918	12	♂	3, 4 L.	.....	Hibbs.....	Cure.....	Operation on tuberculous hip four years later; death from mixed infection of hip in 1924
16	1918	8	♂	3 - 5 L.	.....	Hibbs.....	Cure.....	Reported as cured in 1924, but not examined
17	1918	9	♂	7 C. - 2 T.	.....	Hibbs.....	Cure (one year later)..	Cannot be found for examination; in 1925, said by a friend to be well
18	1918	26	♂	12 T. - 1 L.	Infected lumbar abscess	Albee, 2 operations	Unknown.....	First operation did not extend low enough
19	1918	28	♂	10 - 11 T.	.....	Albee.....	Failure	
20	1918	4	♂	10, 11 T.	Tuberculous sternum	Hibbs, second operation, bone graft	Death, tuberculous miningitis 8 months postoperative	Specimen showed bony union at operative site
21	1919	35	♂	8 - 10 T.	Tuberculous metaphal. positive guinea-pig test	Hibbs.....	Unknown.....	Cannot be found
22	1919	28	♀	12 T., 1 L.	Paraplegia	Albee, second operation Hibbs	Unknown.....	Aspiration of cold abscess gave positive guinea-pig test
23	1919	34	♂	2 - 5 C.	.....	Albee.....	Cure, 1922.....	Cannot be found in 1925
24	1920	25	♂	4 L.	.....	Albee.....	Unknown	
25	1920	30	♂	3 L.	.....	Albee.....	Unknown	
26	1920	26	♂	5 L.	Large infected abscess	Hibbs.....	Death 18 months postoperative	Patient died from effects of prolonged suppuration
27	1920	32	♂	2 - 3 L.	Tuberculous rib, lung and epididymis	Hibbs.....	Cure, 1926	
28	1920	38	♂	5 L.	.....	Hibbs.....	Cure, 3½ years postoperative	Cannot be found in 1926
29	1920	21	♂	L. - S.	.....	Hibbs.....	Cure	
30	1920	16	♀	2 - 5 L	.....	Hibbs, two operations	Cure.....	Second operation necessary in 1925
31	1920	24	♀	4, 5 L.	Psoas abscess, which later broke down and became infected	Hibbs.....	Abscess still discharging in 1925	
32	1921	5	♀	9 - 12 T.	.....	Hibbs, three operations	Cure	
33	1921	10	♂	7 - 9 T.	.....	Hibbs.....	Unknown	
34	1921	27	♀	5 L., 1 S.	.....	Hibbs, Albee.....	Failure.....	A joint persisted between 5 L. and 1 S. after first operation
35	1921	?	♂	4, 5 L.	Infected abscess, plus tuberculous tarsus	Hibbs.....	Unknown; dead in 1926	
36	1921	35	♀	4, 5 L.	.....	Hibbs.....	Cure.....	Cure reported by letter, but no examination in 1925
37	1921	9	♂	7 - 9 T.	.....	Hibbs, 2.....	Unknown.....	Second operation two years after first, for persistence of symptoms
38	1921	42	♀	7 T.	.....	Hibbs, 2.....	Cure.....	Second operation for persistence of symptoms
39	1921	5	♀	3, 4 L.	.....	Hibbs, 2, plus graft	Cure.....	Second operation for persistence of symptoms
40	1922	4	♂	5, 6 C.	.....	Hibbs, 2.....	Cure.....	Second operation for persistence of symptoms
41	1922	22	♂	1, 2 L.	.....	Hibbs.....	Cure	
42	1922	21	♂	4, 5 T.	.....	Albee.....	Unknown	
43	1923	13	♂	2, 4 L.	.....	Hibbs.....	Cure	
44	1923	18	♂	12 T. - 2 L.	Infected abscess	Hibbs.....	Improved.....	Great deformity; suppuration for seven years
45	1923	13	♀	2 - 4 L.	Infected abscess	Hibbs, 2.....	Cure ?.....	Reported well in 1925, but not examined
46	1923	34	♂	7 - 9 T.	.....	Hibbs.....	Unknown	
47	1923	23	♀	10 - 12 T.	Tuberculous tarsus, tendovaginitis, and finger	Albee.....	Death.....	Meningitis, seven weeks after operation
48	1924	14	♀	8 - 10 T.	.....	Hibbs.....	Cure ?.....	Examined one year after operation
49	1924	5	♂	3, 4 L.	Infected abscess	Hibbs.....	Unknown.....	Suppuration said to be still going on
50	1924	28	♀	4, 5 L.	.....	Hibbs.....	Cure.....	Last examined one year after operation
51	1924	38	♂	5 L.	.....	Hibbs.....	Cure	
52	1924	2	♀	.....	.....	Hibbs, 2.....	Cure.....	Second operation for persistence of symptoms
53	1925	21	♂	2, 3 L.	Enormous psoas abscesses	Hibbs.....	Cure	

* In this column, ♂ indicates male; ♀, female.

ever, the roentgen-ray picture is fairly conclusive. Fracture gives a different history, and the film shows a crushing rather than a destruction of the bone. In coccidioidal granuloma, the lesions are wont to be multiple, and the oidium can be recovered sooner or later in the pus. It is rare at best. Syphilis can usually be excluded, with care. A syphilitic lesion would tend to grow worse without the appropriate treatment, and quickly better with it, and would not be affected by any operation.

In quite a number of our cases we have obtained strong presumptive evidence from the demonstration of tubercle bacilli in the pus from a cold abscess, by guinea-pig inoculation. Against this, one might argue, of course, that we were not sure of the connection of the abscess with the spine.

In several of the cases, a paraplegia has disappeared after the operation. Indeed, occasionally the improvement sets in almost immediately. On the other hand, one of our histories indicates that a paralysis supervened on an Albee operation. The paralysis is almost always caused by granulation tissue under the posterior common ligament, pressing on the anterior columns of the cord, not by bony pressure, and activity of the process seems to be necessary for the continuance of the paralysis.

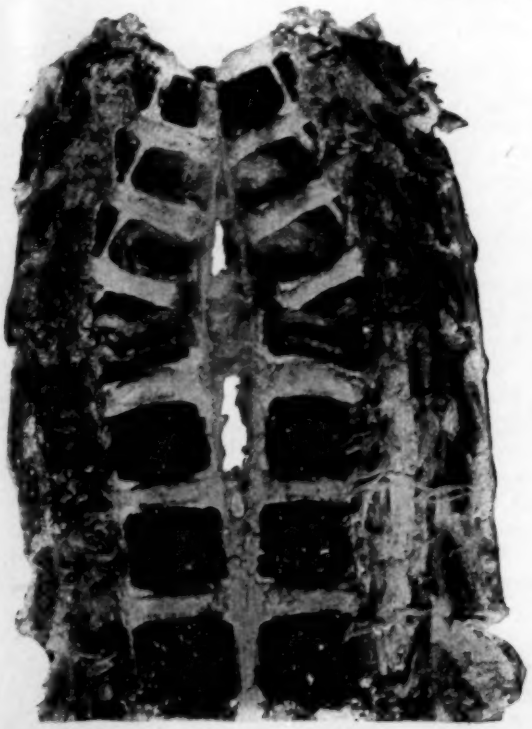

Fig. 5.—Spine in case 20 laid open from behind. The wedge shape betrays the identity of the vertebra first involved. In spite of the extensive involvement of the two cephalad vertebrae, the bony bridge keeps them from collapsing. No signs of healing can be seen.

When we speak of a cure after operation, we do so with a reservation. Patients are not cured as they are after a successful appendix operation. The focus of infection remains indefinitely, perhaps throughout life. I have one specimen showing well marked calcification of the lesion, and another without any evidence of repair. In both, the spine was firmly ankylosed. The most we can accomplish is to bring the disease to a standstill.

Tuberculosis of the spine indicates a lack of resistance of the patient to the tubercle bacillus, and the presence of a tuberculous lesion somewhere else in the body. It is not to be wondered at that many of the patients die early. Their death is not to be charged against the spinal operation, and often not to the spinal disease itself. Several of our patients died of meningitis, but only one after so short an interval as to justify a presumption of cause and effect.

In the old days, cold abscesses formed and increased in size during careful treatment with plaster of paris or braces, necessitating prolonged rest in bed. In none of our cases did this occur after the formation of the bony bridge. This is, perhaps, one of the strongest arguments for operative treatment. It stops activity when the nonoperative treatment evidently failed. When, after operation, roentgenograms showed the formation of an abscess or the increase in size of an already present one, a second operation showed that the bony bridge was not complete or was not extensive enough.

CONCLUSION

A rational explanation of all the symptoms and physical signs of joint tuberculosis is that they are nature's effort to put the joint at rest. Laboratory investigation confirms this. Our experience in the orthopedic clinic at Stanford is that spinal tuberculosis is no exception to the general rule. An ankylosing operation should be done on patients of all ages, whose general condition permits it. If the operation is not successful, it should be revised. The reason for failure will usually be found to be a break in the bony bridge. The greatest danger is unskilful anesthesia.

Clay and Webster streets.

SPOROTRICHOSIS

REPORT OF TWO CASES

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While sporotrichosis can no longer be considered a rare disease, in view of the number of cases which have been reported with increasing frequency during the last few years, the condition is sufficiently uncommon to justify putting additional cases on record, particularly if they occur in a region in which it has heretofore been absent, or at any rate unrecognized.

In the last few months, two cases of the disease have come to my attention, both originating in this section of Wisconsin. I have searched the literature of the subject fairly thoroughly, and have been able to find reports of only two additional cases from this state. One of these is mentioned in an article by Meyer,[1] in 1915, and was not verified by culture; the other was described in detail by Baer,[2] in 1920. While the organism cultivated from the latter case differed slightly in some respects from the one usually found, nevertheless typical lesions were present, and there is no doubt that the case was one of true sporotrichosis.

REPORT OF CASES

My two cases may be briefly described:

CASE 1.—A rural mail carrier, referred to me by Dr. Frank Wochos of Kewaunee, Wis., July 1, 1925, aged 38, gave a previous history which contained nothing of any significance. The general physical examination was negative. About two

1. Meyer, K. F.: Relation of Animal to Human Sporotrichosis, J. A. M. A. **65**: 579 (Aug. 14) 1915.
2. Baer, C. A.: Sporotrichosis: Report of a Probable Case, Wisconsin M. J. **18**: 375 (Feb.) 1920.

months previous to consulting me, while transplanting some shrubbery in his yard, he scratched the right middle finger at the base of the nail on the thorn of a barberry bush. He paid no attention to it at the time, but at the end of a week or so the apparently insignificant laceration showed no signs of healing; on the contrary, it seemed to be getting larger, and in addition a red, painless swelling had appeared on the dorsum of the hand. He treated the original lesion with poultices, ointments and various home remedies, with no effect whatever, as it continued to get worse. During this time more red, nodular swellings had appeared on the hand and forearm. He now sought medical advice, and consulted several physicians in turn. None of them apparently recognized the true nature of the disease, but considered it an unusual form of infection with a pus organism, with an ascending lymphangitis. He was advised to treat it by means of hot fomentations, which he did, with no improvement. More nodules continued to appear on the arm, and the original lesion showed no tendency toward healing. The nodules appeared first as painless lumps in the subcutaneous tissue; gradually the skin over them became a dusky red; the nodules finally became fluctuant and somewhat painful, and some of them opened spontaneously, exuding a thick, gelatinous pus and leaving a small, superficial ulcer, with somewhat undermined edges; this ulcer would slowly heal, leaving a brownish pigmentation of the skin.

Fig. 1 (case 1).—Primary lesion, or sporotrichotic chancre.

The appearance of the primary lesion, or sporotrichotic chancre, as it is sometimes called, at the time of my first examination, is fairly well shown in figure 1. The entire end of the finger presented a raw, ulcerated appearance, with exuberant granulations and many small abscesses, from which a yellow pus exuded. The nail was loosened, and pus could be expressed from beneath it. The appearance of this primary lesion presented a superficial resemblance to cutaneous blastomycosis, although there was not the tendency to central healing, and the abscesses were larger.

The nodules on the forearm and upper arm are shown in figure 2. These were in all stages of development: some were not yet visible but could be palpated as hard lumps in the tissues; others were dusky red, slightly elevated and hard; still others were soft and fluctuant, apparently ready to open. Constitutional symptoms were entirely absent, and had been so since the beginning.

Smears were made from the pus from the original lesion, but revealed only pus cells and staphylococci. Cultures of this pus likewise produced nothing but staphylococci. Pus aspirated from one of the unopened nodules showed no characteristic organisms when examined in the smear, but cultures on glucose agar told an entirely different story. The growth was slow in appearing, nothing being visible until the sixth day, when small, white, circular colonies having a rayed appearance developed. These gradually increased in size, the surface becoming corrugated and brownish to almost black. Films and hanging drop preparations from these cultures showed long filaments with numerous ovoid spores. Here and there could be seen single spores, and also bunches of from twenty-five to thirty attached to the filament by a short pedicle or stem. The appearance of a slide is shown in figure 3. The organism corresponded in every detail with *Sporothrix schenkii*, and definitely established the diagnosis.

The patient was immediately put on increasing doses of potassium iodide, and complete recovery promptly followed.

CASE 2.—A general storekeeper, aged 45, seen in consultation with Dr. O. W. Saunders of this city, was of the opinion that sometime previously he had scratched his right middle finger on a packing box, though the history of the original trauma was somewhat indefinite. He likewise had been through several hands before we saw him, without the nature of the disease being recognized. The condition present when I saw him was exactly the same as in case 1; having this patient under treatment at the same time, I made the diagnosis with no difficulty; however, cultures were made, and proved positive for *Sporothrix schenkii*. Prompt and complete recovery followed the administration of potassium iodide.

REPORTS IN THE LITERATURE

Sporotrichosis, recognized as a definite entity, is a disease of comparatively recent date, the first case having been reported in America by Schenk[3] in 1898. This was followed in 1900 by the report of another case by Hektoen and Perkins.[4] In 1903, de Beurmann's[5] original report dealing with French cases appeared. Following this, cases began to be reported from all over the civilized world, and the literature of the subject grew rapidly. In 1912, Hamburger[6] stated that more than 200 authentic cases were on record at the time, and since then many additional ones have been reported.

CLINICAL VARIETIES

While the disease usually appears as a cutaneous manifestation, it is by no means confined to the skin structures, and apparently no part of the body is exempt. The frequency with which the skin is attacked is probably accounted for by the usual mode of infection, as a result of minor peripheral traumas. According to de Beurmann,[7] four clinical varieties of the disease may be recognized.

1. A localized cutaneous form, with a definite primary lesion, or sporotrichotic chancre, together with an ascending lymphangitis and local lymphadenitis. The cases reported in this paper belong to this variety.

2. A disseminated, gummatous form. In this variety, multiple subcutaneous nodules appear, distributed throughout the body without systematic arrangement; in the early stage, these consist of small, hard, round, painless masses; later they soften to form large and small soft cold abscesses. A distinguishing feature is the fact that there is no ulceration.

3. A disseminated ulcerative sporotrichosis. This is characterized by multiple polymorphic ulcerations

Fig. 2 (case 1).—Sporotrichotic nodules of hand and arm.

resembling tuberculous, syphilitic, ecthymatous, rupial or furuncular lesions, or a mixture of these.

4. Sporotrichosis affecting the extracutaneous tissues. In these cases, localization may be in the mucous membranes, bones, joints, ocular tissues, muscles, synovial membranes, kidneys, lungs or other viscera or tissues.

THE ORGANISM

The disease is due to infection with *Sporotrichum*, a fungus. When the condition first began to be studied,

3. Schenk: On Refractory Subcutaneous Abscesses Caused by a Fungus Possibly Related to Sporotricha, Bull. Johns Hopkins Hosp. 9: 286, 1898.

4. Hektoen and Perkins: Refractory Subcutaneous Abscesses Caused by Spirothrix Schenkii, a New Pathogenic Fungus, J. Exper. Med. 5: 77, 1900.

5. De Beurmann and Raymond: Ann. de dermat. et syph. 4: 678, 1903.

6. Hamburger, W. D.: Sporotrichosis in Man, J. A. M. A. 59: 1590 (Nov. 2) 1912.

7. De Beurmann: Brit. M. J., 1912, p. 289.

it was believed that different manifestations were due to different varieties of the organism, and various strains were described, as, for example, *S. schenkii, S. beurmani* and *S. dori*. Later investigations, however, seem to have established the identity of all these as *S. schenkii*, the morphologic differences formerly noted as characteristic of different varieties all appearing at different ages of *S. schenkii*, as mentioned by Taylor.[8]

In certain parts of the United States, especially Pennsylvania, Ohio, Indiana, Iowa, Nebraska and North and South Dakota, spontaneous sporotrichosis of domestic animals, particularly horses, is very common. From the same districts, numerous cases of human infection have also been reported, and it has been definitely determined by Meyer [1] that the infecting organisms in the equine and human types are identical. In spite of this fact, it seems to be fairly well established that contact infection from animals to man is very rare.

The fungus seems to have a rather wide distribution in nature, being present especially on shrubbery and grain stalks. Several cases of infection have occurred from the handling of rotten logs and stumps, when new land is being cleared.

The organism is practically never found in the pus from discharging abscesses; cultures from these abscesses are likewise unsatisfactory. It is readily grown, however, from pus obtained by aspiration from an unopened nodule.

The fungus grows on all ordinary mediums, best in the presence of glucose and slight acidity, at room temperature. One of the most satisfactory is 2 per cent glucose agar. The growth is slow in appearing, and nothing may be noted for from five to seven days. At the end of this time, on agar slants, small, white, circular colonies appear, which rapidly enlarge peripherally, and assume a rayed appearance; in stabs, the growth has a radiating, flower-like appearance. The colonies become raised, and the surface corrugated, and as the growth gets older, it is brown to brownish black. Subcultures from the original culture have a tendency to grow much faster, the colonies appearing within forty-eight hours.

The organism stains readily with the ordinary stains, such as Loeffler's methylene blue, azure, Giemsa's and methyl thionin. In many cases, according to Taylor, the spores and young mycelia are gram positive and acid fast.

A suitable preparation, examined microscopically, shows aboundant branching, septate mycelial threads and numerous ovoid, pea-shaped spores. These spores may appear attached laterally to the mycelium by a delicate pedicle, or in clumps at the ends of the short threads. In the older cultures, free spores are numerous.

The disease may occur at any age, but the majority of the cases reported are in adults, undoubtedly because this is the time of greatest manual activity, with consequent greater likelihood of infection. For the same reason, more men acquire it than women. Cases are more numerous among farmers, fruit and vegetable dealers, berry pickers and florists.

In the ordinary cutaneous form, which is most frequently encountered, infection usually follows a trivial trauma, such as a scratch from a nail or wire, a knife cut, or a prick from a thorn or stalk of grain. Cases are reported following the bite of a rat or hen. The period of incubation is slow and the onset insidious; more and more nodules form, following the course of the lymphatics; the clinical course is slow and long drawn out; there is no pain or fever, and no effect on the general health. All these characteristics are typically shown by the two cases reported in this paper.

Occasionally, the deeper structures such as the tendon sheaths, and even the bones may be attacked; or a sporotrichotic septicemia may occur, with multiple gummatous lesions of the skin and viscera.

Microscopically, according to Taylor, the lesions are granulomatous in appearance. The center is usually necrotic; surrounding this is a zone of dense cellular infiltration, with polymorphonuclear cells predominating; outside the latter zone is a large area of congestion, hemorrhage and infiltration of large eosinophilic cells, with marked proliferation of connective tissue and frequent giant cells. The spores of the organism can be demonstrated in the lesions, more numerous at the periphery of the necrotic area, but distributed throughout, and usually intracellular. The mycelium cannot usually be satisfactorily demonstrated in the lesions.

Fig. 3.—Stained preparation from culture showing mycelia and spores; × 1,200.

DIAGNOSIS AND TREATMENT

The diagnosis, in the form of sporotrichosis most frequently encountered, that affecting the extremities, is not difficult after the case has developed and the nodules have formed, as the disease presents a characteristic appearance. Under these circumstances, the only other condition likely to be confused with it is an acute ascending lymphangitis and lymphadenitis; but such an error would be excusable only if no opportunity were given for examination other than mere inspection. It is true that both conditions present the picture of red streaks and enlarged lymph nodes secondary to an infected wound, but here the resemblance ceases. In sporotrichosis, the wound of entrance presents an entirely different appearance; the streaks are more pronounced, the glandular nodules, in addition to being palpable, are visible as dusky red swellings and are more numerous; the history shows a prolonged course, and pain, disability and constitutional symptoms are conspicuous by their absence. All this forms a clinical picture that is difficult to mistake for anything else, and a highly probable diagnosis can be made from the

8. Taylor, Kenneth: Sporotrichum Schenkii, J. A. M. A. **60**: 1142 (April 12) 1913.

physical examination alone, which is rendered positive by the presence in the blood of an agglutination reaction for *Sporotrichum*, and later, by the cultivation of the organisms from pus obtained under sterile precautions from one of the unopened nodules. The presence of an eosinophilia, while confirmatory, is of no real diagnostic significance, since it occurs in many other conditions.

Other forms and modifications may present more difficulty. The primary lesion, or chancre, strongly resembles cutaneous blastomycosis; it differs, however, in that the abscesses are larger. There is not the marked tendency to central healing; large crusts do not form, and the peripheral local spread of the lesion is slower. Likewise, cutaneous blastomycosis does not give rise to the lymphangitis and lymphadenitis so characteristic of sporotrichosis. With involvement of the deeper structures and bones, with the tissues riddled with sinuses, as sometimes occurs, and with the extensive secondary infection always present after the nodules have opened, the picture is far from typical. In such a case, tuberculosis may enter into consideration; in fact, it may occasionally be present. Under certain circumstances, too, it may become necessary to rule out syphilis and epithelioma.

Having the salient features of the disease and the possibility of its occurrence in mind, however, with a little care the diagnosis should offer no insurmountable difficulties. Naturally, a careful history of the disease from its inception should be taken; the occupation of the patient, the nature of the original trauma, the insidious onset and slowly progressing course of the disease, whether or not it has shown any effect on the general health, all these points are important, and throw light on the condition present, so they should be carefully considered. No reliance can be placed on a fresh smear from the lesions; in most cases the organisms cannot be demonstrated; cultures should always be made, and with these cultures, the agglutination test can be carried out. I wish to emphasize once more that the material for cultures must be taken from the unopened nodules; secondary invaders are always present in the primary lesion and in the open nodules, and no growth of *Sporotrichum* will be obtained from pus from these sources.

The treatment is simple, and consists in administering increasing doses of a saturated solution of potassium iodide. Local applications of compound solution of iodine (Lugol's solution) may hasten the disappearance of the primary lesion. Under this management, the patients all recover.

Silicosis.—As an aid to physicians in the state of New York in diagnosing cases of silicosis, Dr. Leland E. Cofer, director of the bureau of industrial hygiene of the New York State Department of Labor, has had prepared a special bulletin in which is presented a summary of the medical literature with especial reference to diagnosis. The bulletin states: Careful studies which have been made of the mortality reports of different countries and cities throughout the world show that the death rate from tuberculosis of the lungs greatly varies. Silicosis is not a well known disease and has not, therefore, been entered on the death certificate as a cause of death, but rather, the terms phthisis pulmonalis, fibroid phthisis or tuberculosis of the lungs have been used. The term "phthisis" is unfortunate, unscientific and, as the statistics show, has been misleading. The sooner it is expunged from the vocabulary of the physician the better it will be, not only for the value of the records, but also for the workers in dust and the reputation of tuberculosis.—*Pub. Health Rep.* **41**:521 (March 19) 1926.

ISACEN (GUGGENHEIM): A NEW PURGATIVE *

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Modern pharmacology is not satisfied with the manufacture of remedies from roots and plants, but tries to obtain the specifically acting principles in pure form. It also tries by new synthesis to produce remedies that act more favorably than those found in nature.

Guggenheim [1] was very much interested in the investigations of Lenz,[2] and developed a new remedy based on them. Lenz made extensive experiments on cats in which an abdominal window was established, so that different remedies could be studied with regard to their action on the intestinal tract. He found that most of the aperient remedies exerted their action by exciting the peristalsis of the colon, when coming into contact with this organ. The effect on the intestine of an extract of senna leaves, or of the different ingredients contained in it as a mixture of anthrachinon derivatives (as anthrachinon glucosides, emodin and chrysophanic acid), consists in provoking peristaltic action when the latter is applied to it. There is, however, some slight difference in the mode of action if each of the foregoing ingredients is applied separately. Phenolphthalein belongs to the same group of substances and acts in a similar manner.

The cause for this difference in the action of the remedies mentioned is explained by Guggenheim through their different degree of acidity and also by their different quality of solubility. On the whole, all combinations whose acidity is less than that of phenolphthalein act weaker than this ingredient, while those substances which have a greater acidity act more efficiently on the intestinal peristalsis.

There is, however, a certain point of acidity which marks the optimum of efficiency above which again the effect changes into inactivity, so that no laxative action results.

Guggenheim synthetically produced a substance similar to the foregoing ingredients, namely, bisoxyphenylisatin, which has a slightly higher acidity.

Guggenheim thought that theoretically this substance would act well as an aperient. In experimenting on himself he found that it really had a laxative effect. However, this substance had the disadvantage that it was slightly soluble in the gastric juice and in this way exerted its action by provoking the peristalsis of the stomach. This untoward early action causes at times nausea and vomiting and thus detracts from its value as a laxative remedy. By changing this substance into a compound which is obtainable by acetylization of bisoxyphenlyisatin, he obtained a new chemical, diacetylbisoxyphenylisatin, which he called isacen.

Isacen is insoluble in acids or water. In this way it cannot be absorbed in the stomach and cannot exert any action while present in this organ. When isacen comes into contact with the alkaline secretion of the

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* Because of lack of space, a table and the structural formulas are omitted from THE JOURNAL. The complete article appears in the authors' reprints.

1. Guggenheim, M.: Die spezifische Kolonwirkung der Abführmittel und ihre Abhängigkeit von der chemischen Konstitution, Schweiz. med. Wchnschr. **55**:16 (Jan. 1) 1925.

2. Lenz: Observations à la fenêtre abdominale colique du chat, Arch. internat. de pharmacod. **28**:1, 1923.

duodenum, it is saponified and splits into bisoxyphenylisatin, and in this way can now exert its action on the bowels.

Guggenheim first tried this new substance on himself. He took 5 mg. from two to four times daily and found that it acted as an aperient without any untoward results.

Katzenelbogen and Guder [3] have tried isacen on many patients in their clinics and corroborate Guggenheim's findings.

On account of the importance of a remedy for constipation, which is such a prevalent condition, we decided to investigate the action of isacen on patients and to study its results.

We made these investigations on private patients and in the Home of the Daughters of Jacob. The inmates of the latter institution are persons aged from 60 upward. Most of them are subject to constipation and rather more difficult to handle than young and healthy subjects, and for this reason they appeared especially appropriate to decide whether or not isacen can be considered a useful remedy for constipation. The accompanying table gives the results of the investigation.

The table contains records of forty-seven patients who took isacen for a whole month. Tablets containing 0.005 Gm. were given two, three or four times daily. In thirty-nine patients nothing else was required to keep the bowels tolerably regular. In eight of the remaining patients an enema or epsom salt was given on some days, while on other days the isacen was sufficient to produce an evacuation of the bowels. Twenty-eight of the forty-seven patients were entirely free from pain or colic while using isacen. Of the remaining nine patients, one had severe pain before and during defecation, while eighteen experienced occasionally some pain either before or during defecation.

The number of movements fluctuated from one to two, seldom three or four a day. Occasionally there would be no movement for a day or two in some of the cases.

All the forty-seven patients were more or less chronic invalids. Four had diabetes. Four had chronic nephritis; nine, paralysis agitans; nine, general arteriosclerosis; two, senile dementia; three, chronic constipation of a severe type; two, tuberculosis of the lungs and pharynx; seven, chronic myocarditis; two, general debility, and one, chronic gastritis.

A laxative remedy will certainly be more efficacious in healthy persons than in invalids. Isacen has proved of great help in these old and helpless patients, and will certainly be of assistance in the routine work of treating constipation.

We also investigated the duodenal contents of a number of patients employing isacen. We usually had the patient take one tablet (0.005 Gm.) of isacen on retiring, and we examined the duodenal contents of the patient the next morning in the fasting condition. In some, neither isacen nor isatin could be detected by the foregoing reactions; in others, we succeeded in demonstrating the presence of isacen only.

In a number of patients who were on duodenal feeding, isacen was given directly through the duodenum. Some patients showed no symptoms and had a bowel movement daily, while a few complained of nausea and slight colicky pains in the abdomen. Anyway, when isacen is applied through the duodenum, more frequently undesired symptoms are encountered than when given by mouth. The reason for this is the larger amount of isacen reaching the duodenum at one particular time, while when administered by mouth, only very small fractions of the medicament reach the intestine at one time.

20 East Sixty-Third Street.

3. Katzenelbogen, S., and Güder, R.: Note thérapeutique sur un nouveau purgatif, Schweiz. med. Wchnschr. **55**: 18 (Jan. 1) 1925.

PHYSIOLOGIC EFFECTS OF SPERMATOXIN

IN RATS, RABBITS AND GUINEA-PIGS *

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One of the chief obstacles preventing definite location of the source of the testicular hormone has been the fact that the several types of tissue in the testis have been inseparable. Only a few authors have been bold enough to state that in their experiments only one type of tissue remained, the other tissues having degenerated. Always in addition to interstitial cells there have been present Sertoli cells and in most cases also spermatogonia. A few workers have claimed partial degeneration of Sertoli cells, but their evidence lacks conviction. As Whitehead [1] stated, only when we can definitely eliminate each type of tissue will the problem be solved.

In seeking a method of eliminating each type of tissue in the testis, it occurred to me to use the cytolysin or antibody production method. In this way, it was hoped that a specific antibody for the germ cells might be produced which would cause complete elimination of the germinal epithelium in treated animals. This specific antibody might conceivably destroy all the germ cell line and leave only Sertoli cells and interstitial cells. Furthermore, it seemed probable that such a cytolysin would also destroy the Sertoli cells because of their position in the seminiferous tubule and because of their otherwise close relationship to spermatogenesis.

The production of such antibodies for sperm has been reported by many workers. Metchnikoff [2] and Landsteiner [3] introduced this field of investigation in 1899. Since then it has been reported on by a number of experimenters. I have found no reports of negative findings; i. e., that a spermatoxin is not formed.

Various criteria have been used as proof of the formation of such spermatoxin. Among these are immobility and agglutination of sperm by serum from immunized animals, delayed pregnancy in immunized females, and injury of the testes in animals injected with their own sperm or sperm from other species of animals.

I have been unable to obtain any evidence of a physiologic reaction. Several series of experiments testing this point have been performed, the fertility of both male and female animals and the condition of the testes being used as criteria. These have been adopted as physiologic tests, leaving the agglutination reaction as a distinct serologic problem. This course has been taken because it is my belief that a serologic or

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* This work was aided by a grant from the committee on sex research of the National Research Council.

1. Whitehead, R. H.: Anat. Record **7**: 83, 1913.
2. Metchnikoff: Ann. de l'Inst. Pasteur **14**: 369, 1900.
3. Landsteiner: Centralbl. f. Bakteriol. **25**: 546, 1899.

immunization reaction may be set up without in any way interfering with the production of spermatozoa or with the fertility of ova.

Albino rats, guinea-pigs and rabbits have been used in these experiments. The work was started on rats because of their fecundity, and because of the fact that they are well adjusted to laboratory confinement. They do not, however, serve well for the production of antibodies, and it was thought best to extend the series by using guinea-pigs and rabbits. The latter animal has been found adapted to this work and has also been used in experiments on spermatoxin formation. The results are presented in several series according to their nature, and the accompanying tables summarize each group.

REPORT OF EXPERIMENTS

Twelve male rats were injected with a suspension of sperm in saline solution. This was obtained by cutting testes into small pieces and shaking in sterile saline solution. One testis finely minced and shaken in 5 cc. of saline solution was used as a standard suspension. Sperm from several species of animals has given the same results, but for the sake of uniformity only those experiments in which rat sperm has been injected into rats, guinea-pig sperm into guinea-pigs and rabbit sperm into rabbits are reported in this paper. Each rat was injected (intraperitoneally) from one to five times, 1 cc. of sperm fluid to each injection being used. The

TABLE 1.—*Results of Experiments in Male Rats Injected with Sperm*

Experiment	Dates of 1 Cc. Injections	Time Between Last Injection and Removal of Testis	Condition of Testes
S 2.....	1-6-20-30-44	Right....14 days	Normal
		Left.....14 days	Normal
S 3.....	1-6-20-30	Right.... 2 months	Normal
		Left..... 4 months	Normal
S 4.....	1-6-20-30-44	Right....14 days	Some tubules degenerated; other tubules normal
		Left.....14 days	Disorder in some tubules; other tubules normal
S 5.....	1-6-17-27	Right.... 1 month	Normal
		Left..... 1 month	Normal
S 6.....	1-19-29	Right.... 9 days	No spermatozoa but spermatids; extensive degeneration in some tubules
		Left..... 9 days	Same as right testis
S 7.....	1-17-27	Right.... 4 months	Normal
		Left..... 4 months	Normal
S 8.....	1-4-8	Right....14 days	Normal
		Left.....14 days	Normal
S 9.....	1-7-13	Right.... 1 month	Normal
		Left..... 2 months	Normal
S 10.....	1-7-13	Right....14 days	Normal
		Left..... 1 month	Some tubules show degeneration; other tubules normal
S 11.....	1-7-13	Right.... 7 days	Normal
		Left..... 1 month	Normal
S 12.....	1-4-8	Right....14 days	Normal
		Left..... 1 month	Normal
S 13.....	1-4-8	Right.... 1 month	Normal
		Left..... 1 month	Normal

number of days between injections varied, as will be seen in table 1. The condition of the testes was the only criterion used in this series as a test for results. Testes were removed from these animals at from seven days to four months after the last injection. The testes were then prepared for microscopic study in the usual manner.[4] In experiments 4, 6 and 10 of this series, degeneration of seminiferous tissue was found. In experiment 4, both testes were removed fourteen days after the last injection. The degree of degeneration is not the same in each testis, and both showed many tubules which appear perfectly normal. In experiment 10, one testis, removed fourteen days after the last injection, was normal. No sign of degeneration was found in it. The other testis, removed thirty days after the last injection, had some degenerated seminiferous tubules, while the remaining were normal. In experiments 4 and 6, the degeneration was found within fourteen days, while in experiment 10 it was found at thirty days, though not at fourteen days. All animals in this series were well advanced in age. At such times it was not uncommon to find them with the testes retracted into the abdominal cavity. Testes are very sensitive to conditions such as malnutrition, anaphylatic shock and even unfavorable environment. The degree of degeneration found in these experiments and the irregularity of their appearance, as in experiment 10, indicates such a response.

TABLE 2.—*Results of Experiments in Male Guinea-Pigs Injected with Sperms*

Experiment	Dates of 15 Cc. Injections	Time Between Last Injection and Testis Removal	Condition of Testis
S 43.....	1-4-8	One week	Normal
S 44.....	1-4-8	Two weeks	Normal
S 45.....	1-4-8	Three weeks	Normal
S 46.....	1-4-8	Four weeks	Some denegeration
S 47.....	1-4-8	Four weeks	Normal
S 48.....	1-4-8	Five weeks	Some degeneration

Spermatogenesis appeared normal in nine of the twelve experiments, though some of the testes seemed slightly flabby before fixation. As most of the testes were normal, it seems reasonable to suppose that this is the natural course of events in such experiments.

In a second series of experiments, rabbits were used instead of rats. Two males were each injected three times at three day intervals with 1 cc. of rabbit sperm suspension. They were killed three weeks and one month after the last injection. In both animals the testes were normal.

In a third series, six guinea-pigs were used. Each animal was injected three times at three and four day intervals with 1.5 cc. of guinea-pig sperm suspension. Testes were removed from these animals at periods of from one to five weeks after the last injection (table 2).

In each of four experiments there was full spermatogenesis, and the testes appeared normal. These animals had been used for bleeding purposes before these experiments were undertaken, and control testes were also degenerated.

Guyer[5] reported several of these experiments in which spermatozoa taken from rabbits that had been injected with their own sperm were used for agglutination tests. Certainly in these experiments spermatogenesis had continued, if he obtained sperm from them for later use. In other experiments, as in experiment 1, the rabbit, after five injections of immunized fowl serum, fertilized a female three days after the last injection. Later matings were unsuccessful, though the testes presented normal histologic pictures. In these experiments the degenerative process should have started at once, since the developed antibody (immune serum) was injected. Professor Guyer suggests the possibility that the effect on spermatogenesis might be due simply to the general lowering of the animals' vitality; he thinks, however, that it is a spermatoxic effect.

4. Compare, for example, Oslund, R. M.: Am. J. Physiol. **70**: 112 (Sept.) 1924.

5. Guyer, M. F.: J. Exper. Zool. **35**: 207, 1922.

McCartney [6] reports that in adult male rats injection of rat spermatozoa or extract of testis results in the destruction of spermatoza and in some cases in atrophy of the testis. He presents six experiments. Two of these rats became sick and should not be included. In one rat the testis at first became enlarged and later atrophied. They contained about half the normal number of spermatoza, and these were immotile. Two other rats showed enlargement of the testes for the first two weeks, but within a month had returned to normal size. "On examination seven weeks after injection, the testes appeared normal, although they did not contain as large a number of spermatozoa as normally. These were motile." The sixth was not affected by the injection of testis extract. In this series, therefore, are found three "normal" rats and one with atrophied testes which had about half the normal number of spermatozoa. These were immotile.

Kennedy [7] reported degenerative changes in the testes of guinea-pigs into which had been injected spermatozoa. He reported that the effects were more pronounced when the animals' own sperm was used for the injection. In Kennedy's experiments the results were not constant. The degenerative changes were found in some of the testes, while the others were normal.

In each of the series by Guyer, McCartney and Kennedy are found experiments in which spermatogenesis is apparently undisturbed, and the animals were fertile. These results are similar to those I obtained and indicate that degeneration of germinal epithelium is not necessarily a consequence of such injections of spermatozoa.

It was reported by each of the workers cited above that females injected with sperm became sterilized, because of the formation within them of an antibody against sperm. Other series of experiments were performed to test this point. In each of these series, the same standard of sperm has been used as in the male experiments.

TABLE 3.—*Results of Experiments in Females Injected and Then Mated*

Experiment	Dates of 1 Cc. Injections	Number of Young	Days After Last Injections
50	1-4-7	9	22
51	1-4-7	12	26
52	1-4-7	7	28
53	1-4-7	13	35
54	1-4-7	10	39

In one series five female rats (all virgins, 4 months old) were each injected with 1 cc. of sperm at three day intervals. They were then each placed with a male. Good litters were raised from each mating. Results in brief are given in table 3. Gestation varies from twenty-one to twenty-eight days, and copulation takes place when the female comes in heat. Since the maximum time between the date of mating and the birth of the young was thirty-nine days, in each case the first copulation must have been successful.

Another series of experiments was made to determine the possibility of producing sterility in female rats by injecting sperm into them. In this series six female rats were first mated, and then the injections were begun. Each rat received two or three injections of 1 cc. of sperm at three day intervals. Each animal was then placed in a separate brood cage. Results are tabulated in table 4. Rats 33, 35 and 36 each gave birth to good litters of young within two weeks of the last injection. Rats 31, 32 and 34 did not give birth to young from this mating. Rats 31, 32 and 33 were again mated about thirty days later, and each gave birth to good litters. The maximum time from the last injection to birth of the second litter of young was seventy days. Forty-nine days elapsed before pregnancy took place, but during that time this rat was isolated and nursing young. She received the male at the next heat period, and this copulation was successful.

TABLE 4.—*Results of Experiments with Females Mated and Then Injected*

Experiment	Dates of 1 Cc. Injections	Number of Young	Days After Last Injection	Number of Young from Second Mating	Time After Last Injection
31	1-4-7	0	..	8	62 days
32	1-4-7	0	..	8	48 days
33	1-4	10	14	10	70 days
34	1-4-7	0	..	Not mated	.....
35	1-4-7	9	11	Not mated	.....
36	1-4-7	10	11	Not mated	.....

In these two series of experiments, injection of sperm into female rats has not prevented pregnancy. Nor has it in any case delayed pregnancy. It has caused abortion. Successful copulations took place soon after the last injection—in one case on the following day.

It was thought possible that a spermatoxin may have been developed in the female, and this affected the embryos after passing through the placenta. First matings of both male and female offspring proved successful in every case. The young did not suffer in fertility or in any other demonstrable way from the injection of sperm into their mothers before or during pregnancy.

In these two series of experiments in which females were injected with sperm, pregnancies took place from the first copulations following the last injection. In no case was copulation unsuccessful. In three experiments, rats that were injected during pregnancy gave birth to full litters of young. The young were fertile in all cases and were used as breeding stock.

Savini [8] made from five to six subcutaneous or intraperitoneal injections of sperm into fifty-seven female rabbits and guinea-pigs one week apart. Seven days after the last injection, these females were allowed contact with males. They were placed together for from ten to fifteen days. Copulations appear not to have been noted. No young resulted from the first contacts, but in many cases conception took place on a second contact of five days only. This is not altogether uncommon for normal breeding stock of rabbits, though some conceptions would be expected from the first contacts. If the contacts happened to occur between the heat periods, the same would be true for the guinea-pigs. The period of immunity was strikingly short, if it existed in Savini's experiments, in that young were produced from the second contacts. He also states that no injurious effects were noted in mice which he injected with sperm. Venema [9] reported two experiments in which he injected a saline suspension of testis into female rabbits. The suspension was kept in an icebox three hours and then before injection was

6. McCartney, J. L.: Am. J. Physiol. **63**: 207 (Jan.) 1923.
7. Kennedy, W. P.: Quart. J. Exper. Physiol. **14**: 279, 1924.
8. Savini, E.: Compt. rend. Soc. d. biol. **71**: 22, 1911.
9. Venema, T. A.: Deutsche med. Wchnschr., 1916, p. 1419.

strained through cloth. Pregnancy did not follow, although the females were kept with the males for some time. This was probably part of the difficulty. Pregnancies seldom result from continued contacts in normal rabbits. Dittler [10] injected female rabbits with fresh sperm at intervals of from one to eight days. After two injections of 2.5 cc. four days apart sterility lasted four weeks. Since the heat period in rabbits occurs about every thirty or thirty-two days, it appears that pregnancy took place at the next copulation. He further states that though no pregnancies resulted after such injections, conception occurred later. After injection with large doses of human sperm his animals always appeared entirely normal. McCartney [11] reported a series of spermatoxin experiments on female rats. From his table,[12] it appears that injections of sperm or testis extract delay pregnancy. Some of his animals, especially those injected with testis extract and human semen, produced young from the first possible matings, as litters were cast in four weeks. His report is based on seventy-nine breeding tests, but so many deaths were reported that the condition of his animals may well be questioned. He reports, however, that all his controls were fertile. All tested young from injected females proved perfectly normal in his series. In the first paper he also reported a series of six experiments on chickens. From them he concludes that subcutaneous injection of rooster sperm suspension into egg-laying hens does not influence the rate of egg production, but renders the egg infertile for a period of from twelve to sixty-seven days. Kennedy [7] stated that female guinea-pigs were made sterile by injecting spermatozoa into them.

COMMENT

In all the experiments reviewed, pregnancies have resulted from some of the early matings after injections of sperm or sperm extract. As contended by the writers, the pregnancies have generally been delayed, but only to the next period of heat in the great majority of experiments. If we accept experiments as recorded and interpreted, it appears that an antibody (a spermatoxin) has been developed in the female, which in most experiments has not lasted more than thirty days. Such a fact is conceivable but highly improbable. The present status of experiments indicates that toxins or antibodies remain active for a longer peroid of time.

Immunity reactions are limited in their influence in the body. Immunity to typhoid does not appear to extend into the digestive tract, nor do the gonococci antibodies affect gonococci in the urethra or vas deferens. An antibody built against sperm would not injure the chemical constituents used in the construction or nourishment of sperm, but would be toxic for the built up products and slightly toxic for the closely related cells. A spermatoxin in the blood of a male rat, rabbit or guinea-pig would have to wield its toxic influence on sperm through the walls of the seminiferous tubules. It is unlikely that spermatozoa in the seminiferous tubules, in the epididymis or in the vas deferens would be injured by a spermatoxin found in the blood of that animal.

The situation in the female is analogous. The ovum is quite secure against any antibody that might be present in the maternal blood. The vaginal and uterine secretions might, but very probably would not, contain these antibodies or spermatoxin. McCartney,[13] however, reports agglutination tests in which such fluids were used showing probable reactions. Functionally, these animals prove to be normal.

There is little reason to doubt that a sperm antibody is produced in animals into which sperm of another species has been injected.[14] There is reason to doubt that a sperm antibody has been built up in the blood of the animals into which their own sperm or sperm suspension has been injected.[15] It is not a foreign protein. In some experiments an autospermatoxin has supposedly been produced in the observed animals following such injections. With an antibody present in the blood of an injected animal, physiologic changes should follow were it not for the limited sphere of antibody activity. Physiologic reactions have been reported, but it is very probable that these antibodies either formed in the blood or injected into it are unable to attack spermatogenic cells in the genital organs.

Metalinikov and Strenikov [16] stated that when spermatoza are placed in the body tissues, a spermatoxin is produced, although the antigen may be implanted in the tissue as an entire testis graft. This seems quite reasonable from a general point of view. It is a foreign protein. But it may persist and grow as a part of the host bearing it. Whether or not there is formed an antibody against it in the blood of the bearer is beyond the point of this paper. Such an antibody, if present, has no effect on spermatogenesis in the case of the male, or on fertility in the case of females. Copulations of males bearing testis grafts have been successful in my cages, and Moore [17] has reported females bearing testis grafts giving birth to young. Such testis grafts usually contain only spermatogonia and some spermatocytes, but these cells should provide an antigen almost identical with spermatozoa.

In another series of experiments on guinea-pigs and rats, the vas deferens was resected. The testicular end was left open, so that the spermatic material formed in the testis flowed into the peritoneal cavity. In these experiments an antigen has been supplied constantly. The testes of these animlas were normal when removed at from one week to six months after resection of the vas.

SUMMARY

It therefore appears that spermatoxins developed in the blood of the male animal have no effect on spermatogenesis or on mature sperm in the genital tract. Temporary aspermatogenesis found in some experiments is probably a consequence of general body reaction, to which testes are very sensitive, and not a specific reaction. The aspermatogenesis reported by various writers is too irregular in its appearance to be the result of specific antibody built up by regular procedure. It also appears quite probable that spermatoxins developed in the blood of the female animal have no effect on the natural response of its ova to sperm.

General bodily reactions, especially the resulting anaphylaxis, cause abortion of ova and often of embryos, if the animals are pregnant. The delay of pregnancy occasionally found appears to be very short in duration and is probably caused by physical disturbances of the body rather than by antibody reactions. Some of the delayed pregnancies reported in the literature appear to have been due to breeding conditions.

10. Dittler, R.: München. med. Wchnschr. **67**: 1495 (Dec. 24) 1920.
11. McCartney (footnote 6); Am. J. Physiol. **66**: 404 (Oct.) 1923.
12. McCartney, J. L.: Am. J. Physiol. **63**: 212 (Jan.) 1923.
13. McCartney, J. L.: Am. J. Physiol. **63**: 214 (Jan.) 1923.
14. Hektoen, Ludvig: Specific Precipitin Test for Human Semen, J. A. M. A. **78**: 704 (March 11) 1922. Hektoen, Ludvig; and Manly, L. S.: J. Infect. Dis. **32**: 167 (Feb.) 1923. Taylor, A. E.: J. Biol. Chem. **5**: 311, 1908. Farnum, C. G.: The Biologic Test for Semen, J. A. M. A. **37**: 1721 (Dec. 28) 1901.
15. Guyer (footnote 5). Savini (footnote 8).
16. Metalinikov and Strenikov: Ztschr. f. Immunol. **17**: 186, 1913.
17. Moore, C. R.: J. Exper. Zool. **33**: 129, 1921.

IMPORTANCE TO THE PRACTICING OPHTHALMOLOGIST OF CONTRIBUTING TO LITERATURE *

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To make a satisfactory contribution to literature, it is necessary first of all to select a subject, and then to be familiar with the literature pertinent to that subject.

Some knowledge of literature is in fact a necessary qualification, and this is not as difficult as it may seem, for our fundamental knowledge of any subject can be learned from textbooks. They contain the accumulated knowledge of previous observers which time has shown to be correct. Our knowledge grows through the addition of new observations, which in turn must be substantiated before they are adopted and admitted to the textbook. During this probationary period, which is necessarily often quite long, the observations must be made available by appearing in the current journals. A knowledge of these observations is necessary to keep abreast of one's subject. Their study creates new interest in our work, which from repetition frequently becomes monotonous, and this result is never more true than in our work as specialists. Our minds become prepared for new observations and new points of view, and we enlarge our points of contact with those whom we are otherwise not likely to meet. The publication of a new observation thus brings about an active exchange of opinion, our literature becomes more virile, and greater progress is made toward our common goal, the elucidation of truth. It is stated that the dignity of any branch of learning is directly proportionate to the excellence of its literature. What, then, can be more important for any of us than to have participated even in the humblest way, in the development of ophthalmology?

The desire to contribute to literature makes for a more careful examination of our observations. Did not Francis Bacon say many years ago, "Reading maketh a full man, conference a ready man, and writing an exact man"?

The genius of ophthalmology lies in fine distinctions. Our problems, owing to the delicacy of the eye, are characterized by their exactness, so that there must be a willingness to make fine distinctions, which in turn require exact thinking, and thus induce sound action.

There is no better way to find out omissions in our work than in attempting to write about it. The necessary thinking over our findings, so as to come to a logical and satisfactory conclusion, is of the greatest value. The gaps in our knowledge and reasoning can be shown up better in writing than by any other means.

It is frequently stated by the new observer that he finds nothing worth while to write about. This I think means that he has not sufficiently studied the subject. Since the humblest observations may be the basis for a satisfactory report, it is not necessary to wait for divine inspiration to publish an epoch-making discovery. Remember what Ruskin said: "It is no man's business whether he has genius or not; work he must, whatever he is, but quietly and steadily, and the natural and enforced results of such work will be always the things that God meant him to do, and will be his best."

All too frequently writing is postponed and the time for the development of this important habit is passed by, until difficulties increase, and become unsurmountable.

Allbutt says that "inspiration for advance in medicine must be derived from observation of patients." Therefore we should examine our cases thoroughly, make very full notes, and not trust to the memory. The value of a simple but carefully completed clinical contribution should not be underestimated; while it may not of itself solve a problem, it may help the correct interpretation of the next case. There is no more helpful statement than Paget's that "practice is full of opportunities for science. Clinical science is as much a science as any other branch of biology. It is the best means of increasing our knowledge of disease."

So we should not hesitate or postpone, but make a beginning in writing; an observation should be written up while it is fresh in one's mind and full of interest. Remember Faraday's secret, which he summed up in the words "Work, finish, publish."

10 East Fifty-Fourth Street.

* Chairman's address, read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

THE TREATMENT OF THROMBO-ANGIITIS OBLITERANS

BY INTRAVENOUS INJECTION OF HYPERTONIC SALT SOLUTION: PRELIMINARY REPORT *

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Nothing very positive can be stated as regards the etiology of the peculiar disease that was studied by Buerger and called by him thrombo-angiitis obliterans, and no satisfactory explanation has as yet been given for the peculiar distribution of the disease. It is our belief that some hereditary transmitted defect, probably sex-linked in character, plays an important part in its causation. Whether the abnormality is primarily one of the blood, of the blood vessels, of the sympathetic nervous system or of the glands of internal secretion, is yet to be determined. There are some facts that point to a possible involvement of any one of these four systems. The discovery of the real nature of this disease is of great importance if a rational therapy is ever to be evolved, and studies along these lines are being carried out in the special clinic established for the treatment of this group of patients, in the outpatient department of Mount Sinai Hospital.

Spontaneous remissions are frequent, and therefore proof of successful treatment is difficult to establish. The pain will often stop of itself; less frequently the ulcers heal without treatment, and occasionally the formation of collateral vascular channels or the reopening of occluded vessels will occur spontaneously. If it were possible to determine that in all the patients amputation of the affected limb is inevitable sooner or later, the ability to save the extremities of these patients would be satisfactory and conclusive evidence of the success of a form of treatment. A review of the clinical histories of the large number of patients who have been studied and treated in Mount Sinai Hospital during the last fifteen years shows definitely that amputation of one limb was performed within a period of five years from the onset of symptoms in a large majority of cases. If, therefore, the greater number

* From the Surgical Service of Mount Sinai Hospital.
* In view of the fact that a better method is now available, the injection of the posterior tibial nerve with alcohol, as advocated in 1922, has been completely abandoned and should not be used in the treatment of these cases.

of patients who have been subjected to a particular form of treatment did not require amputation within a period of five years from the beginning of treatment, the value of the therapeutic method used would be indubitable.

For over three years I have employed frequently repeated intravenous injections of hypertonic salt solution as a method of treatment of thrombo-angiitis obliterans, and the results appear of sufficient value to justify a preliminary report. Although two or three more years will have to elapse before the measure of success in preserving the extremities of the first fifty patients treated can be reported on, the beneficial results appear so definite that attention should be called to a simple, although not entirely original, method of treatment.

The administration of fluids to patients with thrombo-angiitis obliterans, whether subcutaneously, as first suggested by Koga in 1913, intravenously, or by duodenal tube, as carried out by later writers, has been followed by improvement in some of the patients. Intravenous injections of hypertonic citrate solution have been used with benefit, and the good results were believed to be due to the citrate itself. I have employed hypertonic sodium chloride solution for the injections, and only in this respect is there any originality in the method of treatment. Sodium chloride was selected for the hypertonic solution because it is the salt to which the body is accustomed, and because 15 Gm. can be administered without danger of toxicity. The solution is prepared in freshly distilled water, filtered, and immediately sterilized. At the present time, 5 per cent sodium chloride is used, 150 cc. for the first injection and 300 cc. for all subsequent injections. The injections are at first given three times a week, later, twice a week, and the length of intervals further increased as the patient improves. The injection is given into a superficial vein in the usual manner by the gravity method; the fluid is allowed to run into the vein slowly during ten minutes, and the patient is kept flat on his back during this period. If care is taken, the superficial veins will not be injured or become thrombosed, so that the same vein can be punctured again and again. If the solution has been properly made, chills or fever should rarely, if ever, follow the injection. I have given or supervised the giving of more than 2,500 injections, without any serious accident or reaction.

No other means of treatment has been regularly employed in the cases that we have treated. A certain number of patients received potassium iodide in the usual doses; some at their own suggestions continued baking and hot baths, and in two, local stimulative treatment of an ulcer with the roentgen ray seemed of value. All patients were urged to drink large quantities of water. The patients who continue to smoke frequently do not improve, and although we do not know the explanation of this phenomenon we have strictly forbidden the use of tobacco. It is exceedingly difficult to make the patients stop smoking, and it is only by repeated warnings and constant admonition that it can be accomplished.

During the injection, the blood volume is increased and the patients often state that they feel warm; the face becomes flushed and the superficial veins engorged. They often complain of thirst. The excretion of the 15 Gm. of sodium chloride injected takes place through the urine within forty-eight hours—approximately two thirds of the salt being excreted the first day, and one third the second day. The administration of hypertonic salt solution produces a certain amount of blood destruction. A slight amount of urobilin may appear in the urine, and a reduction in hemoglobin and red blood cell count will occur. As the majority of patients with thrombo-angiitis obliterans have a high hemoglobin and red cell count, a slight blood destruction is of no serious consequence. No symptoms of anemia have ever been produced even in patients who have been treated for a very long time; but if a mild anemia should occur, the injections should be stopped for a time, or diminished. No injury to the heart or to the kidneys has ever been seen, in spite of prolonged treatment in many cases. It is advisable to examine the urine and to repeat the blood count once a month to follow any changes that may occur. On theoretical grounds, it would seem that the repeated increase in the blood volume, necessarily stretching the vascular system, is responsible for the improved circulation and the development of the collateral blood supply that results. Another possible factor is the dilution of the blood with resulting decrease of viscosity.

Since February, 1923, more than 2,500 injections of hypertonic salt solution have been given to sixty-six patients. The accompanying table gives the results.

Results of Injections of Hypertonic Salt Solution

Improved	46
Unimproved or too early to judge result	14
Amputations necessary	6
Total	66

Improvement may be noted immediately, but more frequently not until at least a few weeks have elapsed. In many cases treatment must be continued for several months before definite evidence of improvement appears. The first subjective evidences of benefit are usually the increase of warmth in the extremities, with a diminution of pain. Objectively, the increase in the temperature of the extremity and the growth of new nails are first seen, then healing of an ulcer, if one is present, and finally the development of pulsation in previously occluded or collateral vessels. In addition, a gain of weight and improvement in the patient's general health was also noted. The healing of ulcers has been the usual rule in nearly all of the cases listed as "improved," although in a few cases from eight to ten months of treatment were necessary. In about one third of the patients who have been treated for over a year, a return of pulsation in the previously obliterated or in a collateral vessel has been found. When a patient has been restored to good health, the intervals between treatments have been lengthened to once a month and less. No patient has been discharged as cured, as it was felt that this would be unsafe; but no patients who have been kept under observation in this way have had a recurrence of symptoms. The best general evidence of the value of the treatment will be seen from the statement that the majority of the patients, many of whom have been unable to work from periods of from six months to three years, were able to return to work and were restored to economic usefulness. The treatment must sometimes be continued for months.

In some instances the treatment is without results, and some of the failures have been in advanced cases in which gangrene had already set in. Even in these patients, however, the treatment has sometimes proved of value. In the last four of these patients, treatment for at least two months had been given before ampu-

tation became imperative. In all of these, amputation at the middle of the leg was performed and a successful result was obtained. It scarcely needs to be stated that when amputation becomes inevitable it is important to give the patient a stump below the knee if at all possible. While amputations below the knee have occasionally been successful in cases of thrombo-angiitis obliterans in which treatment has not been given, this is certainly the exception rather than the rule, as will be apparent to any one who sees a large number of these crippled men. Four consecutive successful amputations at the middle of the leg are not many, and it is far from my desire to claim that all such amputations will meet with equal success. The fact is recorded as possible evidence of the value of the saline treatment administered to these patients, but only further experience can demonstrate whether this was not merely a coincidence.

SUMMARY AND CONCLUSIONS

1. Repeated intravenous injections of hypertonic salt solution have been used in the treatment of sixty-six cases of thrombo-angiitis obliterans.

2. Improvements have resulted in the majority of patients, those noted being cessation of pain, increased temperature of the extremity, growth of the nails, healing of ulcers, and reopening of obliterated vessels.

3. No dangerous reactions or untoward results of any kind have been noted in more than 2,500 injections.

4. Four consecutive successful amputations below the knee have been done in four advanced cases after preliminary saline treatment.

5. If begun before the disease is too far advanced, treatment of thrombo-angiitis obliterans by repeated injections of hypertonic sodium chloride solution will check the progress of the disease and will restore the patients to health and usefulness in the majority of instances.

55 East Eighty-Sixth Street.

CALCIUM ABSORPTION FROM THE INTESTINAL TRACT IN HUMAN SUBJECTS

AN EXPERIMENTAL STUDY *

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AND
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WASHINGTON, D. C.

There are numerous reports in the literature of the therapeutic value of calcium salts when given by mouth, more particularly in such conditions as the hyperesthesias and hypersusceptibilities; but their authors have never shown any convincing proof in the way of laboratory findings. Some assert that they have obtained slight elevations in the blood calcium level, but the blood changes reported were very small, and in no case have the blood analyses shown a variation great enough to indicate definitely that they were not due to experimental error.

The absorption of calcium from the intestinal tract has been the subject of much discussion and the objective of a vast amount of research. Many investigators have denied that calcium is stored in the tissues or even absorbed from the intestinal tract. A great number of experiments have been reported in which animals were given large amounts of calcium salts orally and did not show retention of calcium in the tissues, or a rise in the blood calcium level. Meigs, Blatherwick and Carey [1] have reported that there was a very slight increase in the plasma calcium after feeding calcium chloride to cattle, but the difference was within the limits of experimental error. Denis and Corley [2] found no elevation of serum calcium in rabbits fed daily doses of calcium chloride and calcium lactate, and no higher calcium content of the tissues than that shown in control animals. Halverson, Mohler and Bergein,[3] and Clark,[4] have published work showing no increase in the calcium content of blood serum in animals given a calcium rich diet, or calcium with their food. Denis and Minot [5] have reported that the blood calcium of normal human

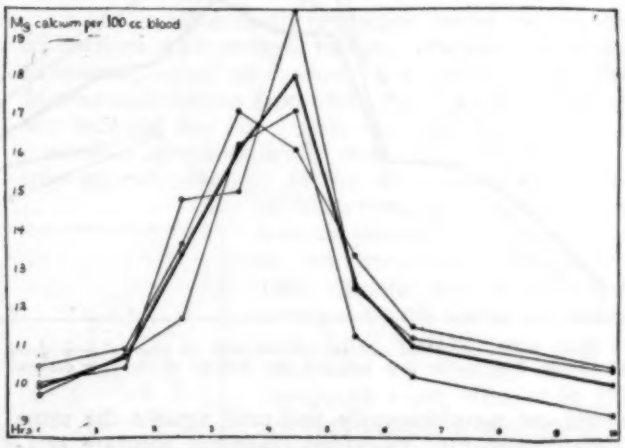

Chart 1.—Hourly blood calcium concentration in three subjects given 20 Gm. of calcium lactate by mouth: The heavier line indicates the average of the three curves.

subjects was not elevated by the daily ingestion of 6 Gm. of calcium lactate for a period of ten days. Salvesen, Hastings and McIntosh [6] found no increase in blood calcium in men given 10 Gm. of calcium lactate and 13.5 and 15 Gm. of calcium chloride daily for periods of from four to nine days; also in dogs, given from 15 to 20 Gm. of calcium chloride and calcium lactate daily for from two to four days, except a 20 per cent increase in the serum of one dog.

A perusal of the foregoing papers reveals that single isolated calcium estimations were made in every case and that the relationship of blood calcium concentration to time of ingestion was not considered, the analyses being performed usually twenty-four hours, or several days, after the last calcium ingestion. This probably accounts for a failure to find any change in the blood calcium concentration by these investigators.

Recently Hjort,[7] examining the blood hourly or at two hour intervals, has shown that the normal blood calcium is elevated in dogs by giving calcium salts orally. When calcium salts were given in amounts equivalent to 0.2727 Gm. of the oxide per kilogram of body weight, this author found the following elevations of the normal serum calcium: with calcium lactate, from 17.4 to 48.7 per cent; with calcium chloride, 32.1

* From the Department of Biochemistry, George Washington University Medical School.

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4. Clark, G. W.: J. Biol. Chem. **43**: 89 (Aug.) 1920.
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6. Salvesen, H. A.; Hastings, A. B., and McIntosh, J. F.: J. Biol. Chem. **60**: 327 (June) 1924.
7. Hjort, A. M.: J. Biol. Chem. **65**: 783 (Oct.) 1925.

per cent; with calcium glycerophosphate, 8.26 and 9.8 per cent; with calcium carbonate, 7.8 per cent.

Because of the interest in the subject of calcium absorption, and in order to obtain evidence relating to the therapeutic administration of calcium salts, the following experiments on human subjects were carried out. The method used for the estimation of calcium was the colorimetric procedure, which we[8] developed, and with which we have had considerable experience. Most of the determinations on any one subject were carried out simultaneously and read against the same standard, and they therefore represent accurate relationships. The subjects were medical students showing no clinical evidences of disturbed calcium metabolism.

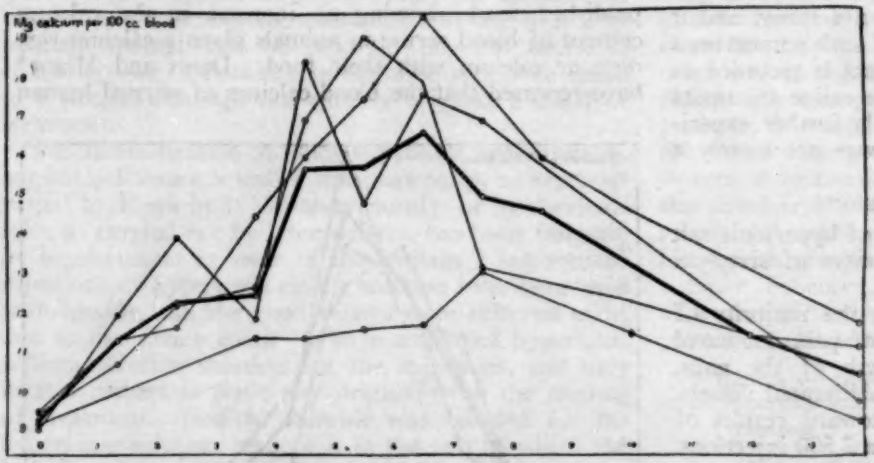

Chart 2.—Hourly blood calcium concentration in four subjects given 5 Gm. of calcium lactate by mouth: The heavier line indicates the average of the four curves.

REPORT OF EXPERIMENTS

EXPERIMENT 1.—This was a repetition of the work of other authors. Two subjects were used. Blood calcium estimations were made on three successive days on samples of blood drawn before breakfast, these values being obtained to establish the individual normals as controls. Five grams of calcium lactate was then given orally on each of the five days following the control period. Blood was drawn on the sixth day before breakfast and analyzed for calcium. There was no increase in the blood calcium concentration, a result that coincided with the observations of Denis and Minot.[8] These findings are summarized in table 1.

TABLE 1.—*Summary of Blood Calcium Estimations in Experiment 1*

Test	Subject A, Mg. of Calcium per 100 Cc. of Blood	Subject B, Mg. of Calcium per 100 Cc. of Blood
Normal, first day	9.42	9.78
Normal, second day	9.47	9.82
Normal, third day	9.43	9.78
Average normal	9.44	9.79
After 5 Gm. a day oral administration of calcium lactate	9.47	9.75

EXPERIMENT 2.—Three subjects were given 20 Gm. of calcium lactate orally in approximately 300 cc. of water. A control value was obtained previous to ingestion, and estimations were made on samples of blood drawn hourly for seven hours. The results are shown in chart 1. The curves show maximum elevations of the normal blood calcium of 64, 76 and 102 per cent between the third and fifth hours following ingestion. The hourly average curve for the three subjects shows a maximum elevation of 81 per cent between the fourth and fifth hours after ingestion, and returns to normal by the tenth hour.

EXPERIMENT 3.—The normal blood calcium was obtained on four subjects, who were then given 5 Gm. of calcium lactate by mouth in 300 cc. of water. Calcium estimations were performed on samples of blood taken hourly for eight hours, and then on samples taken ten, fourteen and twenty-four hours after ingestion. The results are shown in chart 2. The curves are less regular than in the 20 Gm. ingestion experiment. Maximum elevations of 43, 104, 105 and 108 per cent were obtained between the fourth and the seventh hours. The hourly average curve reaches a maximum elevation of 80 per cent above normal between the sixth and seventh hours, and remains elevated much longer in this experiment than in experiment 2, returning to normal approximately fourteen hours after ingestion of the calcium salt.

EXPERIMENT 4.—The normal blood calcium was determined for three subjects, after which they were given 2 Gm. doses of calcium lactate. Samples of blood were drawn four hours after ingestion, no food being taken in the interim, and analyzed for calcium. After the fourth hour, blood was drawn and analyzed for five consecutive hours, and, since at the end of this time the blood calcium concentration of all the subjects had returned to normal, no further samples were taken. The results are shown in chart 3. The curves are smooth, and show striking similarity. Maximum elevations of 43, 53 and 54 per cent were obtained at approximately the sixth hour after ingestion. The hourly average curve exhibits a maximal elevation of 49 per cent at the sixth hour, and returns to normal eight hours after ingestion.

COMMENT

These experiments show that calcium is absorbed from the intestinal tract just like any other diffusible substance. There is a rise in the blood calcium concentration following the ingestion of calcium salts, which varies according to the size of the dose, but is not strictly proportional to the amount taken. The average curves for the 2, 5 and 20 Gm. ingestion experiments (chart 4) show that the first appearance of calcium in the blood is favored by large dosage, the peak of the curves occurring in the order of size of dosage in each experiment. The return of the blood calcium concentration to normal is not proportional to dosage, however, which is a very important point, therapeutically. The 5 Gm. administration maintained an elevation above 12 mg. of blood calcium per hundred cubic centimeters for nine hours, while the 20 Gm. dose maintained the

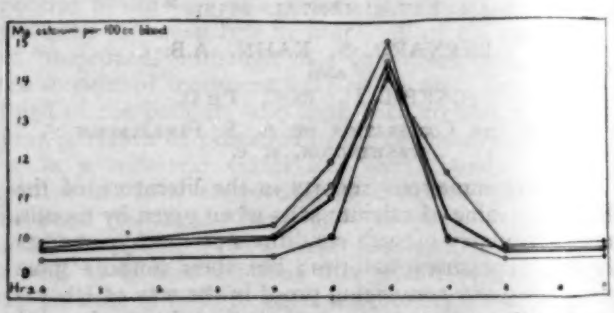

Chart 3.—Hourly blood calcium concentration in three subjects given 2 Gm. of calcium lactate by mouth: The heavier line indicates the average of the three curves.

8. Roe, J. H., and Kahn, B. S.: J. Biol. Chem. 67: 585 (March) 1926.

same elevation less than four hours, and the 2 Gm. dosage about one and one-half hours. The only explanation we suggest for the more rapid return of the blood calcium concentration to normal in the instance of the 20 Gm. experiments is possibly an increased irritation of the intestinal mucosa by the larger amount. These findings show that optimal absorption is determined by two opposing factors, mass action of the dose, and, possibly, irritant action of the salt, and that optimal absorption will be the resultant of these two opposing influences. Our experiments indicate that 5 Gm. of calcium lactate represents approximately the optimal dose when this salt is given by mouth. Below this amount there is insufficient mass action, and above this quantity some unknown influence, possibly irritation of the intestinal mucosa, depresses absorption.

SUMMARY

Calcium lactate administered orally to ten human subjects showed elevations of the blood calcium level as follows: Twenty gram doses gave an average maximum elevation of 81 per cent between the fourth and fifth hours following administration, and a sustained elevation above normal for approximately four hours. Five gram doses gave an average maximum elevation of 80 per cent between the sixth and seventh hours following ingestion, and maintained an elevation above normal for approximately nine hours. Two grams gave an average maximum elevation of 41 per cent at the sixth hour following ingestion and a sustained elevation above normal for one and one-half hours. These findings are in disagreement with the work of many investigators, who have asserted that the blood calcium concentration cannot be increased by the oral administration of calcium salts, and they confirm the work of Hjort,[7] who found definite elevations of the blood calcium in dogs given calcium salts by mouth. Five grams appears to be the dosage of calcium lactate that will give optimal results therapeutically.

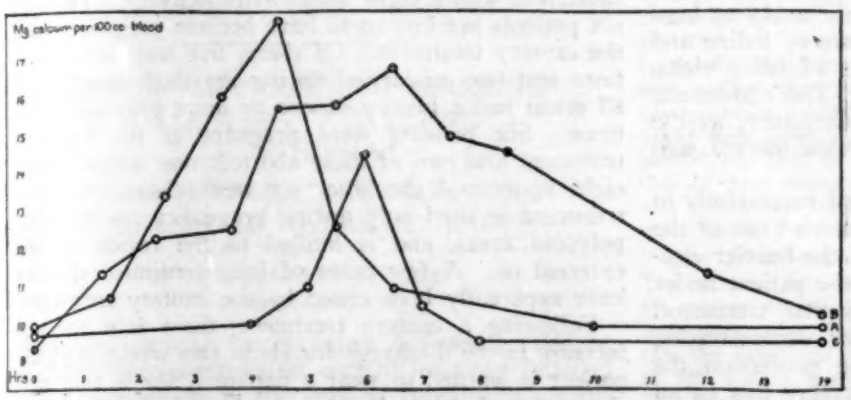

Chart 4.—Average curves for the blood calcium concentration in the three ingestion experiments, drawn on the same scale: *A*, 20 Gm. average curve; *B*, 5 Gm. average curve; *C*, 2 Gm. average curve.

Source of Epinephrine.—Epinephrine is probably manufactured as a by-product of tyrosine, as is suggested by the presence of the oxyphenyl group in the chemical composition of the hormone. Tyrosine is a by-product of protein catabolism. If there is not sufficient ingestion of protein to allow of tyrosine and amino-acid derivatives being produced, the suprarenal bodies have not the materials from which to make epinephrine, except from their "tissue protein."—Dickson, Wanless: Endocrine Basis of Pernicious Vomiting in Pregnancy, *Practitioner*, May, 1926.

THE CAUTERY TREATMENT OF CHRONIC ENDOCERVICITIS

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Chronic endocervicitis, with or without erosion, is a very common condition. It is especially frequent among married women who have had one or more pregnancies, but may be found at times in patients with unruptured hymen. It is worthy of note that McGrath[1] found cervical disease in 38 per cent of the single women and 80 per cent of the married women in a series of 1,000 consecutive patients at the Cornell clinic who had a retrodisplacement of the uterus.

Chronic endocervicitis is always due to the presence of bacteria even though trauma, whether chemical or mechanical, may have acted as a predisposing cause. Microscopic studies from different portions of the cervix indicate that the glands near the external os are commonly diseased, while those near the internal os may appear normal. In the more recent cases, it is probable that the glands near the internal os need not be considered in the treatment. Winter,[2] in 1888, demonstrated that the endometrium of the uterus is normally free from bacteria, and this was confirmed by Curtis,[3] in 1918. Stroganoff[4] and Menge,[5] in 1895, working independently, found that bacteria are not normally present above the external os. Curtis,[6] in his last paper, states that his bacteriologic studies indicate that approximately 30 per cent of all patients with chronic purulent leukorrhea are carriers of virulent streptococci. He believes that while these organisms may account for spontaneous postpartum and postoperative infections, they should not be overemphasized as chronic foci capable of causing arthritis and other serious systemic disturbances. Laura Moench,[7] on the other hand, working with Rosenow at the Mayo Clinic, has demonstrated that streptococci grown from the chronically infected cervical glands of patients suffering from arthritis are culturally identical with the anaerobic streptococci grown from other foci of infection in these patients, and that experimentally they produce joint lesions in rabbits.

Cervical erosions are a frequent complication of chronic endocervicitis. They are an indication of the chronic irritation, and in the light of our present knowledge it seems probable that long continued irritation favors the development of cancer. A differential

1. McGrath, J. F.: Retroposition of the Uterus, Surg. Gynec. Obst. **42**: 241 (Feb.) 1926.
2. Winter, G.: Die Mikro-organismen in Genitalkanal der gesunden Frau, Ztschr. f. Geburtsh. u. Gynäk. **14**: 443, 1888.
3. Curtis, A. H.: A Combined Bacteriological and Histological Study of the Endometrium in Health and in Disease, Surg. Gynec. Obst. **26**: 178 (Feb.) 1918.
4. Stroganoff, V.: On the Bacteriology of the Female Sexual Canal, Monatschr. f. Geburtsh. u. Gynäk. **19**: 1009, 1895.
5. Menge, C., and Kronig, B.: Bakteriologie des weiblichen Genitalkanales, Leipzig, A. Georgi **2**: 332, 1897; Centralbl. f. Gynäk. **19**: 314, 1895.
6. Curtis, A. H.: Chronic Pelvic Infections, Surg. Gynec. Obst. **42**: 6 (Jan.) 1926.
7. Moench, Laura M.: The Relationship of Chronic Endocervicitis to Focal Infection, J. Lab. & Clin. Med. **9**: 289 (Feb.) 1924.

diagnosis between early carcinoma and chronic endocervicitis with erosion may be impossible without a microscopic examination.

Every woman patient who complains of pelvic symptoms should have a speculum examination. Many physicians are overlooking more or less serious cervical disease through neglect of this simple procedure. Endocervicitis is frequently a factor in the production of one or more of the following complaints: dysmenorrhea, sterility, pelvic pain, dyspareunia, backache, menorrhagia or metrorrhagia, nervousness or general debility. When present, it should be cured as a part of the medical treatment.

The recognition that chronic endocervicitis is something of a menace to the patient's health has led to renewed efforts to cure it if possible without the surgical removal of the cervix. A high amputation removes the diseased tissue, but should be avoided if possible during the child-bearing period. The results following low amputation are frequently more or less unsatisfactory. The Sturmdorf conical excision of the cervical glands is undoubtedly the most satisfactory surgical treatment of this condition, but it means an operation and a hospital bill. Multiple scarification and the use of iodized phenol (carbolic acid) or local applications with silver nitrate, tincture of iodine and zinc sulphate require a large number of office visits, and the healing is often incomplete. The end-results with radium have not been very satisfactory, as the effects could not be limited to the cervical mucosa, and the bacteria were not destroyed.

Heat in various forms has been used successfully in the treatment of endocervicitis. Hunner's[8] use of the Paquelin cautery and the later use of the heavier electric cautery were possible only with the patient under an anesthetic, and again meant hospital treatment. Dickinson[9] deserves great credit for demonstrating and bringing to the attention of the profession the possibility of using the nasal type cautery tips as an office procedure in the treatment of various cervical conditions. Following his report in 1921, I began a rather cautious test of this method. While the early use in the office was not entirely satisfactory, largely because of timidity and a noisy transformer, later, with a proper equipment and more experience, the results improved and confidence in the method was established.

The technic used in our office is briefly as follows: After a suitable bivalve speculum has been inserted, the mucous discharge is thoroughly removed with cotton balls and applicators. A suitable light weight cautery tip, preferably from one-half to three-fourths inches (13 to 19 cm.) long, is placed firmly against the tissue to be destroyed and the current turned on by pressing the button on the cautery handle. As a sufficient depth is reached, the tip is gradually moved so as to make a line through the diseased tissue. In many cases it is necessary to cauterize only the glands near the external os and the eroded area; in others, the disease extends to the internal os. If at any time the patient complains of discomfort, the contact button is released and the current not applied again until she is comfortable. This process is continued until a sufficient number of cautery lines have been made. Nabothian cysts are destroyed in a similar manner after they have been punctured with the heated tip. An effort is made to reach the depth of the glands so as to destroy a part of the diseased tissue and all the bacteria. The lines are at least three-sixteenths inch apart, so that only a part of the cervical glands are destroyed. This permits regeneration of fairly normal glands. If the patient is very nervous or conscious of considerable pain, we administer nitrous oxide-oxygen analgesia or anesthesia in the office. Only a few patients are now being sent into the hospital for cautery treatment. In many ways the analgesia is more satisfactory than complete anesthesia for the office patient. She can administer it herself according to the technic formerly described for self administration during normal labor.

Since making our first report,[10] in December, 1924, an additional 180 patients, making a total of 317, have been treated by this method by my associate, Dr. Cron, and myself. A considerable number of these required two treatments, a few, three; and one had four before healing was complete and permanent. One hundred and nine patients delivered by us have been cauterized before being discharged. We have both observed that satisfactory healing occurs more promptly in patients cauterized within eight weeks after delivery. Twenty-six patients are known to have become pregnant since the cautery treatment. Of these, five had early abortions and two miscarried during the sixth month, but all seven had a history of one or more previous abortions. Six patients were pregnant at the time of treatment and two of these aborted, one within forty-eight hours and the other six weeks later. Cautery treatment is used only during pregnancy for bleeding polypoid areas, and is limited to the region of the external os. A few cases of long continued sterility have apparently been cured by the cautery treatment.

Following a cautery treatment, there is a marked increase in the discharge for about two weeks, and the patient is warned to wear a napkin. She is told that the next period may be more profuse than normal. A few patients have had excessive bleeding and have required a pack for a few hours. The patient is instructed to keep clean by frequent washing of the external genitalia. Douches are of questionable value, and as a rule women are warned against their use. We have found it advisable to clean out the vagina and cervix every week or ten days and to paint the cauterized area with mercurochrome-220 soluble or compound tincture of benzoin until healing is complete. A second cautery treatment is rarely indicated under four weeks, and very few require any more. Failure to clean out the cervix during the process of healing may result in a stricture of the external os. We have had to dilate the cervix in four patients who were not under observation following repeated cautery treatment. The cautery should never be used during the acute stage of a cervical infection. Patients with retroflexion should not be cauterized until the uterus has been replaced and a proper pessary inserted. Subacute salpingitis contraindicates the cautery. Sex trauma should be avoided for at least two weeks after the treatment, and in extensive cases longer. The cervix should never be cauterized during an operation in which the uterosacral ligaments are to be shortened. Syphilis of the cervix contraindicates the cautery.

It is our present practice to have puerperal patients that show any sign of cervical disease on the examina-

8. Hunner, G. L.: The Treatment of Leukorrhea with the Actual Cautery, J. A. M. A. **46**: 191 (Jan. 20) 1906.
9. Dickinson, R. L.: Endocervicitis and Eversion and the Nasal Cautery Tip, Am. J. Obst. & Gynec. **2**: 600 (Dec.) 1921.
10. Davis, C. H.: Chronic Endocervicitis, Surg. Gynec. Obst. **40**: 568 (April) 1925.

tion five or six weeks after delivery return in two or three weeks for another inspection and cautery treatment, if it seems indicated. This prophylactic measure may prevent more serious disease of the cervix in the future and is recommended.

This treatment is not considered a cure-all, but our experience with it has been so favorable that we rarely advise a cervical operation unless other surgery is needed. If a satisfactory result is not obtained, one may still resort to the Sturmdorf excision, tracheolorrhaphy or some type of amputation. We have operated on the cervix of only four patients who were previously treated with the cautery. Three were in the hospital for other surgery, and the cervix was repaired or amputated as an incident in the operation. One was sent in for a Sturmdorf excision about seven weeks after a rather superficial cautery treatment because of the patient's impatience and desire for the quickest possible relief. She was cured of her cervical discharge, but after a year is still sterile. This is the most satisfactory gynecologic treatment possible in an office, and I know of no other single procedure that has given such gratifying results.

141 Wisconsin Street.

CARBON MONOXIDE POISONING FOLLOWING ETHYLENE ANESTHESIA*

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CHARLES M. SWINDLER, M.D.
AND
W. S. McELLROY, M.D.
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Recently, serious complications following ethylene anesthesia were encountered, with at least one fatality; another case which, in the light of subsequent events, could be ascribed to the same cause, and a third case in which the patient was dangerously asphyxiated.

The clinical and laboratory findings point to carbon monoxide as the causative factor. We are not aware that any previous reference has been made to carbon monoxide as a source of difficulty in the use of ethylene in anesthesia. Therefore, this preliminary report is made for the purpose of calling attention to this grave possibility, and the necessity for more careful control of the purity of the ethylene used.

CLINICAL FINDINGS

CASE 1.—A white man, aged 39, of average weight and medium height, was admitted to the hospital suffering from a compound, comminuted fracture of the left leg; laceration of the forehead, with possible fracture of the frontal bone; and extensive contusion of the left shoulder. The patient was in profound shock at the time of entering the hospital, but, under the usual methods of treatment, reacted favorably and, forty-eight hours after admission, was taken to the operating room for the purpose of reducing the fracture of the leg by the open method.

Ethylene anesthesia was used and was practically uneventful until after the operation was completed and the anesthetic was about to be withdrawn, when it was noted that the pulse began to thin out and become imperceptible. The respirations became slower and shallow, the anesthetic was withdrawn and forced inhalations of oxygen, with about 10 per cent carbon dioxide, were given as a restorative. The pulse and respirations suddenly stopped about five minutes after the foregoing symptoms were noted. The period of anesthesia was fifty minutes.

The pupil, which was moderately contracted, and the reflex sluggishly active, suddenly dilated at the same time; the patient was cyanotic, the ears being rather pink. Artificial respiration with inhalations of carbon dioxide and oxygen continued for about ten minutes without any favorable response. Postmortem pallor appeared in the skin, and efforts at resuscitation were stopped.

On account of the fact that symptoms of collapse did not begin to appear until the operation was almost concluded, that there had been extensive comminution of the bone at the site of fracture, and that the symptoms of collapse were so sudden and came on without warning, the anesthetic was not considered an exciting factor, but a diagnosis of probable fat embolism was made as the cause of death. It is felt that this diagnosis should be revised in view of the experience in cases 2 and 3, in which the patients were anesthetized from the same lot of gas.

CASE 2.—A man, aged 25, sustained a fracture of the external malleolus, the injury occurring about ten days previous to the operation, which consisted of reduction of the fractured malleolus.

Ethylene anesthesia was used. The patient was somewhat nervous; induction was stormy, with considerable secondary excitement. The pulse ranged between 100 and 120. No marked complications of anesthesia were evident beyond the undue excitement until the operation was finished and the anesthetic had been withdrawn. The period of anesthesia was twenty-five minutes. At the conclusion of the anesthesia, it was noticed that the patient did not revive promptly on administration of carbon dioxide and oxygen, but the respirations were quite shallow and the patient cyanosed. The patient was held in the operating room for observation for two or three minutes, when it was noticed that while there was still some tendency toward cyanosis, respirations were more free and regular, and he was returned to the ward.

CASE 3.—A young adult was anesthetized with ethylene. The induction was somewhat stormy; the patient vomited after ten minutes of anesthesia, and then settled down to an apparently uneventful course. After twenty minutes, it was noticed that the pulse was becoming thin and thready and had risen to 135 beats a minute. Respiration was shallow and slow. The anesthetic was immediately withdrawn, and resuscitation measures—inhalations of pure oxygen with 10 per cent carbon dioxide, were substituted. The patient had about five voluntary respirations of this mixture, and suddenly ceased breathing, the pulse stopping simultaneously and the pupil immediately dilating. Forced artificial respirations with carbon dioxide and oxygen were continued for about ten minutes without favorable result.

In this case, a peculiar cherry red color was noticed in the skin of the entire body, especially on the chest, which confirmed the suspicions already engendered that there might be some toxic agent in the anesthetic. After ten minutes of artificial respiration, the cherry red started to fade, and postmortem pallor and lividity began to appear. Artificial respiration was then stopped.

Fifty cubic centimeters of blood was immediately withdrawn from the heart chamber of patient 3, and the same amount was taken from the vein of patient 2, who had been sent down to the ward a half hour previous. These specimens were sent to the hospital laboratory, and tests for carbon monoxide were positive, as given in the laboratory report.

LABORATORY FINDINGS

Results of Examination of the Blood.—On dilution of the blood with water and on comparison in test tubes with a similar dilution of normal blood, a definite cherry red, characteristic of carbon monoxide hemoglobin, was observed. The blood from both patients gave strong positive reactions for carbon monoxide hemoglobin with the following reagents: sodium hydroxide, potassium ferrocyanide, tannic acid, phenol (carbolic acid), phenylhydrazine, and phosphotungstic acid. Spectroscopically, the presence of carbon monoxide was shown by the behavior of the blood toward reducing agents. The quantitative saturation of the blood with carbon monoxide

* From the surgical and laboratory departments, St. Francis Hospital.

was determined by means of the colorimetric method developed by the United States Bureau of Mines. The blood from patient 1 showed 50 per cent, and from patient 2, 60 per cent saturation with carbon monoxide.

Examination of Ethylene for Carbon Monoxide.—The cylinder of ethylene used when delivered to the laboratory was practically empty; therefore, an adequate amount for thorough examination was not available. Bubbling about 3 or 4 cc. of the gas through a solution of hemoglobin failed to show the presence of carbon monoxide. The cylinder was submitted to the Mine Safety Appliance Company of Pittsburgh, which evacuated the residual gas and, using a combustion chamber, found a carbon monoxide concentration of 0.7 per cent.

Two other fresh stock cylinders of ethylene, labeled 1 and 2, were examined for carbon monoxide, with positive results. No. 1 cylinder bore the same manufacturer's serial date as the cylinder used in the cases reported; no. 2 cylinder, a different serial date.

A guinea-pig was placed in a small respiration chamber, which was attached to the apparatus used in administering the ethylene to the two patients. In this manner anesthesia was induced in the guinea-pig, with the same ethylene-oxygen mixture as administered in the cases reported. The anesthesia was maintained for about one hour. With cylinder 1, the guinea-pig died after one hour of anesthesia. Blood was withdrawn from the heart, and the qualitative tests used on the patients' blood gave strongly positive reactions for carbon monoxide hemoglobin. Quantitative examination showed 70 per cent saturation with carbon monoxide. Furthermore, by bubbling the ethylene directly from the cylinder through normal human blood, typical tests for carbon monoxide hemoglobin were obtained.

Cylinder 2 was used, and the guinea-pig, still alive after one hour of anesthesia, was removed from the respiration chamber, and blood was withdrawn from the heart. This blood gave the typical reactions for carbon monoxide hemoglobin and quantitatively about 50 per cent saturation with carbon monoxide.

COMMENT

The apparatus used in the three cases is an approved type wherein the gases are bubbled through water and mixed in a common chamber with a sight-feed control. The usual mixture is, approximately, from 15 to 20 per cent oxygen and from 80 to 85 per cent ethylene, with carbon dioxide added up to 5 per cent, as indicated by the depth and number of respirations of the patient. Nitrous oxide is used for purposes of induction only and is seldom continued more than three minutes.

The routine preanesthetic narcotic medication, consisting of one-fourth grain (16 mg.) of morphine, and $\frac{1}{150}$ grain (0.4 mg.) of atropine given hypodermically one-half hour before operation was given in the first two cases, but in case 3, morphine was reduced to one-sixth grain (11 mg.) on account of the age and body weight, which was somewhat below the average.

The death of the first patient, as mentioned, was ascribed to possible fat embolism, but on account of the similarity of the symptoms between this case and the fatal third case, and also the fact that the gas was administered from the manufacturer's same serial number, it is felt that the first case should be regarded as an anesthetic fatality rather than due to embolism.

The second patient recovered.

In all three cases, the signs of collapse did not occur until the operation was practically over and the anesthetic was about to be withdrawn.

The clinical and laboratory findings point to carbon monoxide as the cause of the complications encountered in the cases reported. The possibility that ethylene combines with hemoglobin, forming a compound which simulates carbon monoxide in its reactions, was considered, but excluded on the basis of Luckhardt's observations, as well as our own.

Furthermore, we have considered the remote possibility that we might be dealing with some impurity in the ethylene other than carbon monoxide which combines with hemoglobin, forming a compound which reacts like carbon monoxide hemoglobin. We are not aware of any known substance of this nature. Such a substance, if it exists, would undoubtedly affect the respiratory function of the blood as does carbon monoxide and, therefore, have the same poisonous effect.

The whole problem is being further investigated in collaboration with the United States Bureau of Mines at Pittsburgh.

Clinical Notes, Suggestions, and New Instruments

DIABETES MELLITUS ASSOCIATED WITH STATUS LYMPHATICUS *

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A great many complications have been described as occurring in diabetes mellitus. Many of these complications may be regarded simply as coexisting conditions, while others seem to bear a definite, direct relationship to the disease itself. The following complication, which we have recently observed, probably belongs to the latter group and is apparently very unusual.

REPORT OF CASE

D. D., a girl, aged 11, who was admitted to the medical service of Bell Memorial Hospital, Oct. 22, 1925, at 7 a. m., and who died four hours later, had suffered from diabetes for approximately two years. During this time she had had a moderately severe form of the disease, but had been kept in good condition by dieting and insulin therapy. She had gained weight and grown in height at a satisfactory rate. In September, 1923, her height was 44½ inches (113 cm.) and her weight 44 pounds (20 Kg.); in May, 1925, her height was 48½ inches (123 cm.) and her weight, 48½ pounds (22 Kg.). There was a history of occasional attacks of asthma beginning in 1918, which were becoming increasingly infrequent.

The patient had not felt well for a day preceding her death, and in the afternoon vomited once and went to bed. Late that afternoon, she dressed and felt very much improved. She ate some dinner and afterward played with her playmates. In the evening, on going to bed, she appeared slightly abnormal but, following a dose of 15 units of insulin, she seemed normal and went to sleep. At 7 a. m., it was impossible to arouse her, and she was immediately brought to the hospital, with the clinical appearance of diabetic coma.

The child was unconscious, her temperature was 104.6, and her pulse was 140. The blood sugar was 645 mg. per hundred cubic centimeters, and the carbon dioxide tension was too low to be read accurately but was approximately 4.5 per cent by volume. The child's breathing was stertorous, becoming increasingly difficult, and she died without regaining consciousness in spite of the insulin and alkalis administered.

The necropsy findings showed edema of the lungs, some cloudy swelling, and fatty degeneration of the liver. The kidneys were normal. The thymus was unusually large, covering the entire surface of the pericardium anteriorly and weighing approximately 50 Gm. The pancreas showed grossly nothing abnormal. The kidneys were normal on gross inspection. There was a distinct enlargement of the abdominal lymph glands, especially those in the mesentery.

A microscopic section of a lymph node of the mesentery showed a chronic inflammatory reaction. The lymphoid tissue was broken up into lobules by heavy bands of fibrous tissue. The peripheral sinuses were dilated and contained leukocytes, mostly of the mononuclear type. There were groups of leuko-

* From the Departments of Internal Medicine and of Pathology, the University of Kansas School of Medicine.

cytes in the surrounding fat tissue, and eosinophils also were present. A microscopic section of the thymus gland showed numerous Hassall's corpuscles, which were very large and showed some hyaline degeneration. There was marked endothelial cell hyperplasia, particularly in the medulla. A section through the pancreas showed no marked pathologic changes, except for striking diminution in the number of islands of Langerhans. Many sections through both the head and the tail of the pancreas were studied before any islands were seen. No definite evidence of regeneration of the islands of Langerhans was seen.

The most striking features of the postmortem examination were the marked enlargement of the thymus, enlargement of the abdominal lymph glands, edema of the lungs, and the microscopic evidence of diminution of the islands of Langerhans in the pancreas. The size of the thymus, together with the lymphatic enlargement, is sufficient to justify the diagnosis of status lymphaticus associated with diabetes mellitus.

It would seem possible that status lymphaticus in this patient bore some definite relationship to the disease. There is much evidence of the relationship between diseases of the various glands of internal secretion. Although we have no knowledge regarding the physiologic action of the thymus, it probably bears some definite relationship to the endocrine system, of which the pancreas is an important member. Patients suffering from status lymphaticus have notoriously little resistance to disease or trauma. It is possible that the extremely rapid onset of coma in this patient may have been due to such lessened resistance. It is also a matter of interest that the patient had numerous blood examinations and a very large number of insulin injections without any bad effects from these slight traumas. The attacks of asthma from which the patient suffered were probably of the thymic type.

A CONVENIENT PILLAR RETRACTOR

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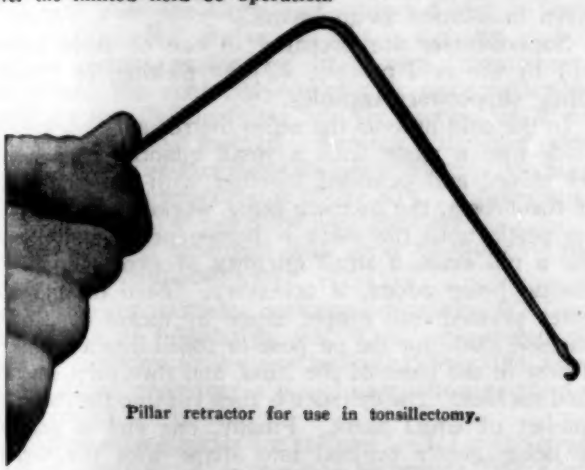
The pillar retractor in common use for tonsillectomy is unsatisfactory. Its straight handle many times brings the hand of the assistant who is wielding it directly into the line of the surgeon's vision, and, in any case, fills valuable space over the limited field of operation.



Pillar retractor for use in tonsillectomy.

Thus, the tonsillar fossa is not always satisfactorily exposed; bleeding points may remain undiscovered and unligated, and residual tabs of tonsillar tissue may be overlooked.

With these things in mind, I had the handle of a Hurd retractor bent to an angle of 90 degrees. This was done in a few minutes by an electric welder. The new instrument thus formed is much more satisfactory than the straight-handled one; with it, the assistant's hand keeps well to one side, out of the surgeon's line of vision and out of the way of his hands.

I have assisted and have been assisted with this new instrument many times; the invariably good results have demonstrated its superior convenience.

181 North Avenue

Special Article

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

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(Continued from page 1692)

RECTAL ADMINISTRATION

Medicaments may be introduced into the rectum for one of three purposes: for systemic action, for local medication, and for exciting evacuation. As the function of the rectum is expulsion rather than retention, it is obvious that ordinarily special measures have to be employed to secure local medication of the colon (endocolonic action) or systemic medication by the colon (diacolonic action). There are, however, certain persons—those suffering from torpor recti (dyschezia of Hertz)—whose lower bowel is extraordinarily insensitive and retentive. In these, exciting evacuation may be more difficult than securing retention. With certain other patients the rectum is excessively irritable, as in various forms of proctitis, in which it may be very difficult to have medicaments retained. Hence it is a good rule to make a digital examination of the rectum before resorting to rectal medication. In this manner, excessive irritability that would require unusual care to secure retention of the medicament can usually be detected; or, if the rectum is filled with feces and the patient has no desire to defecate, torpor recti may be diagnosticated. A rectum distended with fecal matter should first be cleaned out by an evacuant enema before it is given the task of receiving medication.

As the rectum is capable of a considerable degree of absorptive activity, this form of systemic administration may be resorted to when the stomach is nonretentive on account of vomiting; likewise when it is desired to spare the stomach and intestine from the action of the drug, or to protect the drug from the action of the digestive ferments. With children, who will not take disagreeable tasting medicaments, or with the insane, who refuse to swallow, rectal administration may become an important recourse. Such a bitter substance as strychnine can best be given to children in suppository form, provided this method of administration is carried out gently, skilfully and tactfully. Unfortunately, quinine is too irritant to the colon to be relied on in the treatment of malaria. It will either be rejected or produce proctitis and colitis, its absorption in either case being interfered with. Sometimes anal fissure, inflamed hemorrhoids or cancer make rectal administration so painful as to be inexpedient unless demanded by the condition itself.

The dose by rectum is generally assumed to be double that by the stomach; but an exception has to be made in the case of certain alkaloids, such as strychnine and morphine, as well as phenol, which are reported to be more toxic when given by rectum than when administered by mouth. This is explained as due to circumvention of the destructive action of the liver on these

* This is the twenty-third of a series of articles on "The Technic of Medication." When completed the articles will be assembled in book form.

substances, part of the burden of absorption being carried on through the inferior hemorrhoidal veins.

It is obvious that the technic will differ according to whether we aim at procuring evacuation of intestinal contents or at securing retention of the injected material. The term "enema" is applied to liquids used for either of these purposes; hence, we must distinguish between evacuant enemas and retention enemas. Ointments are introduced into the rectum chiefly for topical use. Enemas require some form of syringe, ointments a special tube for introduction. Suppositories, which are solids conveniently shaped for insertion into the rectum, require no apparatus. Hence they may be considered the preferable form of rectal administration, unless special reasons render other forms desirable.

SUPPOSITORIES

Suppositories, in the widest sense of the word, are conveniently shaped solid preparations intended for medication of mucous cavities other than the mouth. Thus there are urethral, vaginal, aural, nasal and rectal suppositories. As the others are rarely used, the name, unless otherwise specified, implies rectal suppositories. These are generally small, cone shaped bodies weighing, according to the U. S. Pharmacopeia, about 2 Gm. (French Codex, 3 Gm.) and certainly not exceeding 5 Gm., and of such consistency as to be solid at room temperature but fluid at the temperature of the body. For infants, they are generally made about half the size prescribed for adults (from 1 to 2.5 Gm.).

Evacuant Suppositories.—Though suppositories are less commonly employed for evacuation than for retention, there are at least two evacuant suppositories of sufficient importance to require mention. The official glycerin suppositories are simply glycerin (3 Gm.)[56] solidified by a small amount of hard soap (sodium stearate) so as to permit shaping it into form convenient for introduction into the rectum. They are obviously less troublesome to use than fluid glycerin, though probably also less efficient. A teaspoonful of pure glycerin, even less (from 2 to 5 cc.), injected into the rectum by means of a small syringe produces within one to fifteen minutes (average, eight) evacuation in perhaps 75 per cent of patients. The evacuation is due to local irritation of the rectal mucosa, caused partly by the hygroscopic and partly by the chemical nature of the glycerin. That it is not merely a question of osmosis is shown by the fact that other solutions of high osmotic tension, e. g., concentrated sodium sulphate solutions, placed into the rectum in a similar manner did not produce evacuation. Frequent repetition of this irritation may result in increased irritability of the rectum, which might be of advantage in torpor recti[57] but would be objectionable under other conditions. Glycerin suppositories are generally carried in stock by druggists, protected in some way against atmospheric moisture. This may be secured by wrapping them in tin foil, covering them with paraffin, or inserting each one in a small glass tube stoppered at both ends.

Soap suppositories, fashioned in the home from any kind of good soap, furnish a simple and convenient means for occasional stimulation to rectal evacuation, perhaps not used commonly enough. Very frequent use of these in any one patient might possibly be as objectionable as that of glycerin suppositories.

Retention Suppositories.—For suppositories that are to be retained, the most generally useful vehicle is oil of theobroma (cacao butter), a solid at ordinary room temperature whose melting point is about 93 F., just a little lower than the normal temperature of the human body. Glycerinated gelatin is sometimes used, especially for urethral suppositories, for which cacao butter is too brittle. Suppositories made with glycerinated gelatin usually weigh about twice as much as those made with oil of theobroma.

Because of their convenience to the patient, suppositories are the preferred rectal administration form whenever the medicine to be given meets the following essential requirements:

1. Liquids cannot be administered in suppository form, unless their dose does not exceed a few drops. In case it does slightly exceed this limit, e. g., solution of epinephrine, it is well to permit the addition of a little hydrous wool fat or to use glycerinated gelatin.
2. The dose must not be bulky. As a general rule, it should not exceed 20 per cent of the weight of the suppository. A maximal quantity of active ingredients would therefore be 1 Gm.; but usually not as much as this is prescribed. Bromide, iodide or salicylate is generally not considered suitable for suppository form.
3. The drug must not be very irritating, or it will not be retained.
4. The drug must not lower the melting point of cacao butter, as do all drugs which dissolve in it, as fixed and volatile oils, phenol, creosote or chloral hydrate. This could, if required, be rectified by the addition of wax (from 10 to 20 per cent), which raises the melting point of the mixture.

For the rectal administration of substances not suitable for suppository form, we have recourse to ointments or enemas. Drugs administered in suppository or ointment form are absorbed more slowly than when given in solution as an enema.

Suppositories are prepared in one of three ways: (1) by the cold process, (2) by melting, or (3) by filling suppository capsules.

In the cold process the active ingredients, sometimes made into a paste with a small quantity of solvent, are mixed and pounded together with the grated oil of theobroma, the mixture being worked actively with the pestle until the mass is homogeneous and plastic like a pill mass, a small quantity of expressed oil of almond being added, if necessary. Then the mass is either pressed into proper shape by means of a little machine made for the purpose or rolled into a cylinder, at first in the palm of the hand, and then on a smooth hard surface. The cylinder is then cut into the required number of equal parts. Finally, one end is pointed by being gently pressed into shape with the thumb and finger, and the other slightly rounded. There are simple machines on the market that shape a suppository mass more rapidly and uniformly than can be done by hand. Lycopodium is used as a conspergative in the same way as in making pills. If, during the process of preparation, the mass becomes brittle and begins to break, plasticity may be restored to it by working it in the hand; if, however, it is handled too much, the mass becomes too soft for satisfactory manipulation.

When melting is resorted to in the preparation of suppositories, the oil of theobroma is melted first; then the active ingredients are added, and the mixture is stirred until it just begins to congeal. It is then poured

56. Manufacturers also place on the market glycerin suppositories of smaller size, suitable for infants.

57. The graduated glycerin enema, suggested in this condition, is administered every morning after the patient has attempted to move the bowel. If he fails, 30 cc. of glycerin is injected. If this proves successful, the next morning a teaspoonful of glycerin is replaced by a teaspoonful of water, and on successive days the reduction in the strength of the glycerin is continued, until eventually 30 cc. of water without glycerin is used. By this time, the patient is generally cured.

into molds chilled by ice. The chief disadvantage of this process is the tendency for the settling and uneven distribution of the active ingredients. This is minimized by closely following the directions given. Glycerinated gelatin suppositories, of course, can be made only by this process.

Suppository capsules made of oil of theobroma or of gelatin are on the market. They are filled like other capsules. While they are less troublesome to prepare, they are less desirable than suppositories prepared in the other ways, as the medicament is not incorporated throughout the mass; hence the action is less uniform, and an irritant less diluted is more irritative.

The prescribing of suppositories does not differ much from the prescribing of pills, excepting that the excipient is always specified and its quantity generally as well. It may be laid down as a general principle that suppositories should be made as small as possible (2 Gm. or less) unless the medicament is irritative or caustic, when making the suppositories larger (not over 5 Gm.) will lessen the irritation and favor retention.

In the subscription we merely state: "Mix and divide into —— suppositories," to which it is well to add "with the edges of the base rounded off." It is unnecessary to specify by what process they are to be made. Cacao butter suppositories are generally dispensed resting on cotton in pasteboard boxes. Glycerinated gelatin suppositories should be protected against dryness as well as moisture by being kept in an air tight container.

Directions to the Patient.—While the transcription usually merely indicates the frequency of administration, explicit verbal directions are given concerning the place and mode of introduction. The usual mode of introduction pointed end first has the disadvantage that, unless the base of the cone is pushed beyond the internal sphincter the whole suppository will be rejected. If, on the other hand, the base of the cone has rounded edges, and this—the larger end—inserted first, as suggested by Gilbert,[58] the suppository is virtually sucked into the rectum, as soon as its widest circumference has passed the sphincter, making it unnecessary to insert the introducing finger into the rectum, as is the case with the usual method. Anointing the cone with oil just before use facilitates its introduction. As cacao butter melts at a temperature above 30 C., suppositories should be kept in a cool place until they are used.

The following examples may serve to illustrate the prescribing of suppositories:

Anodyne suppositories composed of opium, 0.1 Gm., and extract of belladonna, 0.03 Gm., advantageously with the addition of cocaine hydrochloride, 0.01 Gm., are employed preceding a bowel evacuation in painful conditions of the rectum.

Sedative suppositories are at times useful in the treatment of vomiting; e. g., codeine phosphate, 0.06 Gm., or phenobarbital sodium, 0.25 Gm., or the two combined.

In prescribing astringent suppositories for bleeding hemorrhoids, 10 per cent of tannic acid should not be exceeded, or else the suppository becomes too irritative.

OINTMENTS FOR RECTAL ADMINISTRATION

Ointments may be applied to the rectum and anal margin by means of the anointed finger gently introduced through the sphincter. Or, better, the ointment may be dispensed in a collapsible tube, such as is used for holding artists' colors. To the end of this tube is fitted a cone shaped tip or a small piece of soft rubber tubing, which is inserted into the rectum. By pressure on the collapsible tube, the ointment may be forced into the canal without difficulty. A hollow cone, sometimes called "pile pipe," may be employed. Generally this is made of hard rubber, having multiple perforations near its tip, while its base is fitted with a sort of plunger which, on being screwed in, forces the ointment out of the holes at the top.

The following examples of rectal ointments may suffice: An ointment for local anesthesia of painful rectal ulcer may be composed of 5 per cent benzocaine in hydrous wool fat. As astringent ointment in treatment of bleeding hemorrhoids, the nutgall ointment (20 per cent) of the U. S. Pharmacopeia is at times useful.

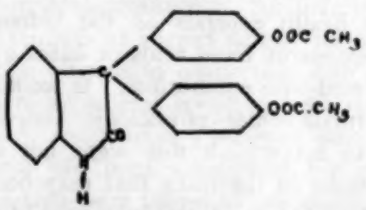
(To be continued)

58. Gilbert, A.: L'Art de prescrire, Paris, J. B. Baillière et Fils, 1920.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ISACEN.—Diacetyldioxyphenylisatin.—



The diacetyl derivative of dihydroxyphenylisatin. The compound resembles phenolphthalein in that the isatin group has somewhat the same general grouping as that of the phthaleins; unlike phenolphthalein, in isacen the two hydroxy radicals (of the two phenol groups) have been condensed with two acetyl groups.

Actions and Uses.—Isacen passes through the stomach unchanged: when it reaches the intestine, a gradual splitting off of dioxyphenylisatin takes place under the influences of the alkaline contents of the intestine. The dioxyphenylisatin thus produced is stated to be nontoxic, not to be absorbed, and to be excreted entirely through the feces: neither dioxyphenylisatin nor the acetyl compound isacen appears in the urine after administration of isacen. Isacen acts as a laxative or purgative, depending on the dosage employed.

Dosage.—As a laxative, 0.005 Gm.; in cases of obstinate constipation, from 0.015 to 0.02 Gm. Isacen is supplied in the form of tablets only.

Manufactured by the Hoffmann-LaRoche Chemical Works, New York. U. S. patent applied for. U. S. trademark 200,220.

Isacen Tablets 0.005 Gm.

Isacen is a white, crystalline, odorless, tasteless powder. It is insoluble in water and dilute hydrochloric acid; slightly soluble in alcohol, very slightly soluble in ether. It melts at 241 to 242 C.

Boil 0.1 Gm. of isacen with 3 cc. of sodium hydroxide solution; cool, dilute to 10 cc. with water: on the addition of a few drops of potassium ferricyanide solution (1 in 10), a cherry red color results. Boil 1 Gm. of isacen with 10 cc. of sodium hydroxide solution; cool, add an excess of diluted sulphuric acid; the odor of acetic acid develops. Dissolve 1 Gm. of isacen in 20 cc. of glacial acetic acid and maintain at 100 C.; a clear solution results (*limit of dioxyphenylisatin*). Boil 1 Gm. of isacen with 50 cc. of distilled water; no odor develops. Cool the solution, add sufficient water to restore the volume of 50 cc.; filter, and to 10 cc. of the filtrate add a few drops of silver nitrate solution; no opalescence is produced immediately (*chloride*). Transfer 2 Gm. of isacen to a glass stoppered cylinder, add 50 cc. of distilled water, shake for five minutes and filter through paper. To 25 cc. of the filtrate add one drop of phenolphthalein solution; on the addition of one drop of tenth-normal sodium hydroxide solution, a pink color results (*limit of acid*). Incinerate about 1 Gm. accurately weighed. The ash should not be more than 0.5 per cent.

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SATURDAY, JUNE 5, 1926

DIET AND HYPERTENSION IN RENAL INSUFFICIENCY

The kidneys are charged with the function of eliminating certain types of waste products, notably the end-products of protein metabolism, from the body. It may be assumed, therefore, that these organs possess a large factor of safety in respect to their capacity to excrete continually varying quantities of nitrogenous and inorganic compounds in solutions exhibiting a wide range of difference in reaction. The organism in health depends on the kidneys for the removal of excess of fixed acids or bases as a part of its essential acid-base equilibrium. It would be unlike any other fundamental physiologic function if the mechanism to accomplish this were not adapted to liberal variations in the tasks that may be committed to it. On the other hand, one may readily understand that disorganization or destruction of any organ thus important would lead to serious consequences, particularly when the functions involved cannot well be vicariously assumed by other structures. In the case of the nitrogenous and inorganic catabolites, the other excretory organs—the skin, lungs and bowel—at best can exert insignificant action.

It can readily be understood, therefore, why certain restrictions of diet have been advocated in the management of certain types of renal disorder. The principle of "sparing" a weakened organ has been put into practice. Nor has this been all. As if to forestall possible deterioration through continued involvement in active excretory functioning, a highly moderated regimen has been recommended even for the healthy. The low-protein diet has been advocated as an insurance against the menace of the unremitting necessity of eliminating nitrogenous waste, not merely in the form of organic compounds but also as the excess of acid catabolites to which protein breakdown characteristically gives rise.

Chronic kidney disease manifested by renal insufficiency may be attended with certain other symptoms of an undesirable nature. Thus, it is well known that a gradual rise of blood pressure is usually observed in chronic glomerulonephritis. This has been attributed by some observers to progressive atrophy of renal tissue. As Anderson[1] has recently pointed out, the real cause of the progressive development of renal insufficiency in chronic nephritis is not clear. One view is that it is due to repeated infections. Day holds that it is due to a specific infection. Bell believes that each new infection occurring in a nephritic patient causes closure of more glomerular capillaries and leaves the patient with a smaller kidney filter than before. Carter, Howe and Mason suggest as a possibility that progressive injury to the kidneys may result from repeated minimal injury by means of irritating food substances, some of which are known and others as yet unrecognized. Injury to the remaining functioning tissue by high concentration of retained metabolites or by overactivity are other possible causes of the progressive development of insufficiency. It is admitted that there is likely to be a concentration of nonprotein nitrogenous substances, such as urea, uric acid and creatinine, higher than normal in the blood of the affected patients. Are these per se or their protein precursors directly responsible for the various pathologic manifestations? If not, has the emphasis placed on "high protein" tended to obscure the possible significance of entirely different etiologic factors?

To what extent diets unusually rich in protein may actually induce detrimental conditions must still be regarded as highly debatable. There are writers who, like Newburgh of Ann Arbor, insist that the human kidney may be injured by protein excess. There is the added suggestion—as yet it cannot be dignified with the designation of compelling evidence—that alleged renal injury is attributable to the excretion of "nephrotoxic amino-acids." Certain cogent experimental tests[2] warn against hasty generalizations. It is conceivable that bacteria as well as diet may injure. Furthermore, the added conclusion that hypertension and arteriosclerosis are due to the same factors is an as yet unwarranted jump.

Problems of etiology and treatment are likely to receive a more ready solution whenever the conditions under investigation can be experimentally duplicated. The history of medicine abounds in illustrations of this. Progress has often been delayed in the interpretations of those diseases for which an experimental counterpart is not attainable. This is to a large extent the case in the study of human renal disorder. Nephroses are readily produced by uranium salts, potassium chromate, chloroform and many other substances, but these conditions do not give a chronic renal insufficiency. The nearest approach to chronic types has been secured by removing or destroying a

1. Anderson, Hilding: Experimental Renal Insufficiency, Arch. Int. Med. **37**: 297 (March) 1926.
2. Jackson, H., Jr., and Riggs, Margaret D.: The Effect of High Protein Diets on the Kidneys of Rats, J. Biol. Chem. **67**: 101 (Jan.) 1926.

large part of the renal tissue. The kidney cortex can be reduced any desired amount and a proportion found that will simulate the reduced filter found in chronic nephritis. But the two conditions are not exactly similar; in chronic nephritis practically all of the glomeruli are at least partially closed, whereas, following partial nephrectomy, the small number that remain are entirely normal.

Anderson [3] has recently demonstrated that removal of two thirds of the kidney substance in rabbits results in a retention in the blood of urea and creatinine, which either increases progressively in intensity until death results, or decreases progressively until normal values are once more attained. If the renal insufficiency is not progressive, the kidney remnant undergoes hypertrophy. A high protein diet causes no further change in the kidney remnant than further to augment the hypertrophy. Such a diet causes a retention of creatinine and urea in the blood in rabbits from which a portion of kidney substance has been removed. It is proportionate to the amount of kidney that has been removed. The retention does not occur in normal animals. The finding deserving of most emphasis in this connection, however, is that hypertension is not caused in rabbits by renal insufficiency per se; nor by a high protein diet even in the presence of a low renal function; nor by prolonged retention of creatinine and urea in the blood. A marked atherosclerosis of the aorta may ensue, but it is not chargeable to the chemical changes in the blood just described. For the present, the reference of high blood pressure to the concentration of the usual blood metabolites must still be subject to large reserve of statement and to openmindedness.

WHISKY—THEN AND NOW

Soon after the passage of the federal Food and Drugs Act of 1906, the formulation of definitions for various products likely to come under the suspicion of the enforcement agents became a pressing and highly debated problem. It early included the question of what constitutes whisky. After considerable controversy the simple official conclusion was reached, in effect, as Bailey [4] has expressed it, that the commodity which was then, and which had been for many years, commonly known and accepted in the trade and among consumers as whisky, was whisky. This interpretation did not limit the name to that product aged in wood whereby the aroma and flavor for which whisky is prized are acquired; nor did it make the natural color developed by the aging process an essential. Thus, factitious whiskies made largely, or in part, from mixtures of grain alcohol, caramel, beading oil and artificial flavor were widely sold as, and for, whisky long before prohibition became operative. The same government chemist has pointed out that, presumably under the influence of the Volstead Act, whisky and brandy, which had hitherto been recognized as medicinal agents and included in the United States Pharmacopeia, were omitted in the ninth revision of that text. But, in view of the fact that both of these commodities are legitimately obtainable under proper restrictions, it would be unfortunate if there were no official specifications for their substance and quality, and in the present (tenth) revision of the Pharmacopeia these two products are again recognized.

Through circumstances that do not require discussion here, it happens that alcoholic fluids alleged to be whisky have not been entirely excluded from use as beverages. The fact that most of both the manufacture and the traffic in such products is conducted in illicit ways has led to widespread possibilities of "adulteration" that may have unexpected menaces to the health of those willing to indulge in the bootlegger's wares. The real danger in the substitution of methylated spirit, or wood alcohol, for ethyl alcohol in potable fluids is now generally recognized.[5] Not long ago we referred to the unexpected presence of considerable—perhaps even menacing—quantities of copper found in samples of "hooch" by government authorities in Massachusetts.[6] An informative investigation of samples of alleged whisky secured by police or prohibition officials in connection with the enforcement of state or federal laws has been reported from Connecticut.[4] Aside from a series of samples in which wood alcohol had been substituted for grain alcohol and all of which were traced to one source, no foreign substance was identified in "bootleg" liquor of the types ordinarily used as beverages, which in kind or amount could be regarded as a probable cause of death.

There is substantial analytic and other evidence to show that much of the alcohol used in preparation of present-day liquors is obtained by the rectification of denatured alcohol, particularly the specially denatured type. Such alcohol generally shows on analysis traces of denaturants that have carried over in the process of purification. What the physiologic effects, cumulative or otherwise, of these small amounts of denaturants may be is speculative, but the Connecticut chemists are aware of no authoritative opinion that traces of such substances as diethylphthalate, isopropyl alcohol, benzene and acetone are likely to produce measurable effects of a dangerous character. However, they insist that with the evidence that much of the alcohol found in intoxicating liquors is derived from the denatured article, there is always the possibility of inefficient purification, and hence such liquors constitute a potential source of danger. In nearly

3. Anderson, Hilding: Experimental Renal Insufficiency, II, Protein Diet Experiments, Arch. Int. Med. **37**: 297 (March) 1926.

4. Bailey, E. M.: The Thirtieth Report on Food Products and the Eighteenth Report on Drug Products, 1925, Bull. 276, Connecticut Agric. Expt. Sta., March, 1926.

5. Medical Aspects of "Bootleg" Liquors, editorial, J. A. M. A. **84**: 1182 (April 18) 1925; Alcohol—Pure and Impure, ibid. **85**: 1560 (Nov. 14) 1925.

6. "Hooch," "Home Brew" and Copper, editorial, J. A. M. A. **86**: 1552 (May 15) 1926.

half of the samples tested the alcohol appears to have been derived wholly, or in part, from denatured alcohol.

It is not without significance to compare the bar whisky of the cheaper sorts dispensed a decade or more ago with the stock in trade of the bootlegger. The average alcohol content is essentially the same. Artificially colored whisky was about as prevalent before prohibition as it is now. Perhaps some of these findings will help to interpret an experienced chemist's comment that "the most poisonous constituent of alcoholic liquors is the alcohol which they contain." Nevertheless it is well to bear in mind further the conclusion of Bailey that the possibility of clumsy manipulation of denatured alcohol in order to make it fit for beverage purposes constitutes a menace to health which cannot be ignored. This applies not only to whisky but to similar liquors, such as gin, brandy and cordials, of high alcoholic content, all of which may be produced factitiously.

TISSUE REACTIONS TO IRRADIATION

Remedies are frequently and justifiably employed in medicine before their exact mode of action is understood; but it is profitable and interesting to obtain definite knowledge as soon as possible, so as to regulate their use to the best advantage. Irradiation of tumors cannot be done to the fullest extent and with the most favorable results until its effects on tumor cells, normal tissues, and the body in general are accurately known.

The effects of irradiation on tumor cells have recently been considered in a summary of the subject by Dr. James Ewing.[1] Either a shrinking and pyknosis of the nuclei, or swelling from imbibition of fluids, resulting in degeneration or necrosis, are among the first of the occurrences in the tumor cells. Mitosis is stopped for a considerable period, even if the cells recover eventually. The exact physical chemistry of the cellular changes is not yet known, but in most cases they take place more readily in dividing than in resting cells, and especially in rapidly growing tumors. Besides this primary injury, irradiation is followed by a secondary and more important injury, due to interference with the blood supply of the tumor. The blood vessels are the site first of inflammation and exudation, and then of induration, resulting in anemia of the tissue supplied. This factor is frequently underestimated in the destruction of cancers. The surrounding normal connective tissue receives some injury also, and the dose must be nicely adjusted so that, while the injury to the tumor cells is followed by necrosis, that to the normal tissue is followed by inflammation and repair. The reaction on the part of the lymphocytes and plasma cells is characteristic of beginning repair, and is followed in many instances by growth of connective tissue which completes the process.

1. Ewing, James: Tissue Reactions to Radiation, Am. J. Roentgenol. 15:93 (Feb.) 1926.

The various systems of dosage differ in the tissue reactions which they call forth, and rational choice between them should be determined by the type of reaction desired. The prolonged single exposure to a moderate dose of hard rays is most efficient in killing rapidly dividing tumor cells and aborting growth, without causing much injury to normal tissue or stimulating a defense reaction. Smaller fractionated doses at intervals of a few days are intended to destroy the tumor cells by the cumulative effect of repeated injuries, and are accompanied by moderate tissue reaction. The method is safe and convenient. The single large killing dose gives the most impressive results, but the exact size of the dose needed for different kinds of tumors is a difficult matter to determine. It causes marked destruction of the abnormal cells, with severe general tissue reaction, and is therefore a most effective method of treatment. The tissue reactions called forth by radium and by roentgen rays also differ, as the former acts chiefly on the actual tumor cells, while the latter stimulate the surrounding normal tissue to a greater degree.

The effect of irradiation on the body in general is also a factor to be considered and may be of considerable importance. The nutrition and metabolism are probably improved by the rays, and it has been suggested that a general nonspecific protein immunization is effected, whereby resistance of the body to the tumor is increased. At present the chief need seems to be for more exact histologic descriptions of the changes caused in different types of tumors by different doses of irradiation and methods of application, so that the mode of treatment best calculated to produce a desired result can be more accurately determined.

Current Comment

JUTE DERMATITIS

Even primitive man realized that certain occupations and trades may be dangerous to health. Hippocrates and Galen mentioned it, and Ramazzini's treatise on the diseases of occupation dates back to 1760. It is only in comparatively recent times, however, that detailed attention has been directed to the precise nature of the manifold menaces to health and longevity for which industrial conditions may be responsible. A higher value is being placed on human life. If the factors that tend to impair its length or efficiency are discovered, they can in many instances be amended or averted with hygienic benefit. Mere diagnosis of the pathologic condition is not sufficient for such progress; the causative agencies and their mode of action must be ascertained. Interest in special occupational diseases varies in different parts of the world, owing to the peculiarities in the distribution of the trades and vocations. The mines and chemical trades, for example, are not always or even commonly centered in the

same geographic regions. Thus, it happens that the problems of vocational hygiene differ markedly in various countries of the world. An illustration of this is afforded by certain features of the jute mills. Aside from the annoyance of the dusts encountered in the production of cordage, twine, jute and similar materials, the occurrence of skin rashes caused by oils and coloring matter has been recognized though rarely referred to. In India, however, where in the provinces of Bengal alone there are more than 281,000 persons working in jute mills, registered under the factory act, jute dermatitis has attained a greater significance. According to Curjel and Acton[1] of Calcutta, this folliculitis, which does not ordinarily give rise to irritation or itching, is a nonsuppurative lesion caused by the mechanical blocking of the sebaceous gland orifices by plugs of the unexfoliated stratum corneum. The primary incitant is the mineral oil used for softening the jute; it does not irritate the skin, but protects the cutaneous surfaces from water and thus increases the accumulation of skin débris, particularly in the natives who do not cleanse their skins thoroughly with suitable detergents. The remedy is simple, so long as septic changes are not superimposed. The occupational affection of the skin in jute workers presents a good illustration of the importance of cleanliness of the body; for the symptoms are so benign that medical advice is rarely sought unless added disturbances supervene.

PIES AND CAKE FOREVER!

Pie is essentially an American dish. Until recently it shared, in certain quarters at least, the characteristic derogation that has often been directed at some of our national products and customs. Forgetting how our Yankee forefathers included pies as the veritable basis of their daily diet, the critics have sought to impugn this widely eaten American product and to assail its use. The dictionary has long defined pie as "prepared food baked either between two layers or crusts of pastry or with only an upper or lower layer." The almost infinite variety of combinations with fruits, meats and what not that the use of flour in the ready-to-eat form of pie permits has served greatly to enhance the popularity of the edible food. Of course there are pies and pies; yet the diversity of pastry cooks and their unlike talents scarcely warrants the unfortunate repute that pie has acquired in many quarters. Foremost is the charge of indigestibility; but why the combination of flour with fat and fruit should preferably be in the form of bread and butter with apple sauce or fruit jam rather than as delectable apple or strawberry pies is difficult to fathom. At any rate, the experts or "food specialists" seem to be showing a change of heart and a revision of ideas. Cake likewise seems to be coming into its own. A recent writer[2] has justly insisted that cakes are real foods. They should not be regarded solely as confections to tempt the jaded appetite, but for what they are—good sources of food essentials. To the charge that cakes are too "rich" for many persons, it should be noted that as a general average these products contain 1,500 calories to the pound, or only 25 per cent more than the average bread. If we translate a culinary blend of flour and eggs with butter, fruits or nuts into terms of foodstuffs, the answer indicates proteins, fats, carbohydrates, mineral nutrients and vitamins. A slice of bread and butter is almost twice as rich in fat as "gold cake" or "devil's food." The day of reckoning has arrived. American pies and cakes will survive the ordeal of dietary criticism.

1. Curjel, D. F., and Acton, H. W.: Jute Dermatitis, Indian J. M. Research **12**: 257 (Oct.) 1924.
2. Shaw, R. H.: Cake and Nutrition, Baking Technology **5**: 104 (April) 1926.

SMALLPOX TAKES ITS TOLL

The way of the transgressor is admittedly hard; and it seems as though the efforts of the reformer also are sometimes beset with undeserved if not insurmountable difficulties. The crusade for the public health continually encounters the forces of ignorance, indifference, prejudice and self-interest that blindly resist innovation and progress. Occasionally it almost seems as though betterment of the race and increased happiness of the individual could be accomplished only at a sacrifice of human effort and self-respect that seems too exorbitant. The prevention of disease as it is practiced today is based on discoveries and experiences that have become a part of the permanent knowledge of the race. Success in preventive medicine therefore demands the unflagging inculcation of established facts. Sometimes this means rebuff and reiteration; but the end to be attained is, after all, precious enough to discount discouragements. Recently our news columns recorded[1] that 163 persons are known to have died of smallpox in California during the first quarter of the year. The cases reported numbered nearly two thousand. One hundred and thirty-six of these deaths occurred in one of the most enterprising cities of the world, Los Angeles. This heavy toll of human life is not attributable to any local impossibility of securing advantage of the triumphs of modern prevention of smallpox. It was not due to the incompetence of the medical profession. The real cause is to be found in the indifference or even active opposition engendered through the influx of antimedical forces. As truth is the best defender of the faith, no opportunity should be overlooked to make the records of history tell their story to those who may waver in their acceptance of the help of modern medicine or even sneer at its claims. In the Jubilee Volume of the American Public Health Association, Chapin[2] significantly records that during the last fifty years only one school child in Providence, R. I., has had smallpox, and that was one of the exceedingly small number of children who, for one reason or another, escaped vaccination. If vaccination were compulsory for all school children, the same record would prevail in all the schools throughout the United States. If some one were to say that the smallpox death toll in California is taken largely among adults, he may be referred to the records of the World War. Despite the extreme

1. Smallpox Kills One Hundred and Sixty-Three in Three Months, J. A. M. A. **86**: 1459 (May 8) 1926.
2. Chapin: A Half Century of Public Health, Am. Pub. Health A., 1921, p. 145.

ease of transmitting contagion in great armies, this disease was a negligible factor in the mortality lists. Even among adults, therefore, almost perfect protection is secured against smallpox when vaccination and revaccination are universally followed. Smallpox must be made to vanish—even if such established platitudes must be reiterated again and again and again.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Summer Medical Courses.—The University of Alabama School of Medicine offers summer courses from June 2 to August 17 in anatomy, pharmacology, surgery and physiologic chemistry, which are of the same character as courses of the regular school session, and for which full credit is given. The classes are limited to forty students in each subject. While designed for medical students, the courses are open to others qualified, provided there are vacancies after medical students have registered. The second term of the summer session opens, July 14.

CONNECTICUT

Another Hospital Centennial.—The New Haven General Hospital, New Haven, celebrated the completion of its first hundred years of service to the community, May 27. In the morning, addresses were made by the heads of four departments of Yale University Medical School, which now conducts the hospital, and following a luncheon, Dr. William H. Carmalt, one of the oldest general practitioners of Connecticut, spoke on "A Retrospect of One Hundred Years," followed by Dr. Rufus I. Cole, Rockefeller Institute, New York, on "The Modern Hospital and Medical Progress." Among the speakers were Drs. Eugene M. Blake, Samuel C. Harvey, Arthur H. Morse and Edwards A. Park, all of Yale University Medical School. The celebration closed with a banquet at which President Angell of Yale, Mayor Tower of New Haven, and representatives of other hospitals in the city gave addresses.

GEORGIA

Society News.—Dr. Henry M. Fullilove, Athens, was elected president of the Railway Surgeons Association of Georgia at the seventy-seventh annual convention, May 11; Drs. Josephus J. P. Bowdoin, Atlanta, William M. Folks, Waycross, and Agnew H. Hilsman, Albany, vice presidents, and Dr. Jarrett W. Palmer, Ailey, secretary-treasurer.——Dr. Leland G. Baggett addressed the Fulton County Medical Society, Atlanta, May 20, on "Gastric and Duodenal Ulcers"; Dr. James K. Fancher gave a clinical talk on "Abnormal Body Weights and Their Relation to the Endocrines."——Drs. Edward S. Cowles and Burr Ferguson, both of New York, addressed a special meeting of the Fulton County Medical Society, Atlanta, June 2, on "Psychopathology with Special Reference to Medicine" and "Control of White Blood Cells," respectively.

IDAHO

Personal.—Dr. Ezra E. Fry, Bonners Ferry, has been elected president of the Bonner County Medical Society, and Dr. Nathaniel R. Wallentine, secretary-treasurer.——The governor has appointed Dr. John I. McKelway, former assistant superintendent of the Western State Hospital at Fort Steilacoom, Wash., as superintendent of the Northern Idaho Sanitarium at Orofino, to succeed Dr. John W. Givens.

ILLINOIS

Physician Sentenced.—Dr. John W. Ballance, Marion, formerly mayor of Harrisburg, Ill., has been sentenced to serve one year and one day in the federal penitentiary at Leavenworth, Kan., it is reported, for violation of the Harrison Narcotic Law.

State Medical Election.—At the seventy-sixth annual meeting of the Illinois State Medical Society, Champaign, May 20, Dr. Mather Pfeiffenberger, Alton, was elected president; Dr. Gustaff H. Mundt, Chicago, president elect; Drs. Earl D. Wise, Champaign, and Charles S. Nelson, Springfield, vice presidents; Dr. A. J. Markley, Belvidere, treasurer, and Dr. Harold M. Camp, Monmouth, secretary. The next annual meeting will be at Moline.

Down-State Milk Control.—The state department of health recently completed detailed inspections of the 349 down-state pasteurizing plants which furnish most of the milk consumed in cities, in accordance with a new law which requires that all pasteurizing plants, except those serving the city of Chicago, secure, annually, certificates of approval from the state health department. These were the first inspections preliminary to issuing certificates of approval. The state health director states that the municipal milk supplies this summer will be of a distinctly better sanitary quality than ever before.

Society News.—At the regular meeting of the Rock Island County Medical Society, Moline, May 11, it was unanimously voted to go on record against the bill recently introduced into the U. S. Senate (no. 4085) "to strengthen the Harrison Narcotic Act"; the scientific program at the meeting comprised addresses by Dr. Burton Hazeltine, Chicago, on "Bronchial Asthma"; Dr. Alvin W. La Forge, Chicago, "The Internist's Problem in Asthma," and Dr. Ralph Kuhns, Chicago.——Dr. Henry G. Schmidt has been elected president of the Elgin Physicians' Club, and Dr. Floyd A. Pingree, secretary-treasurer (reelected); the next meeting will be in October.

Chicago

Personal.—Dr. John Gordon Wilson has been elected chief of staff of the Wesley Memorial Hospital, to succeed the late Dr. William E. Schroeder.

Dedication of Memorial.—The John B. Murphy Memorial Association and the American College of Surgeons announce that the John B. Murphy Memorial building, 48 East Erie Street, Chicago, will be dedicated, June 10-11. Mr. L. A. Goddard, president of the Memorial Association, will preside, June 10, on which day, Sir Berkeley G. Moynihan will deliver an oration. Dr. Rudolph Matas will preside, June 11, when addresses will be given by Dr. George W. Crile, Cleveland; Dr. William W. Chipman, Montreal, Canada, and Dr. William J. Mayo, Rochester, Minn.

INDIANA

Personal.—Dr. Dudley F. Davis has been elected president of the New Albany Academy of Medicine.——Dr. and Mrs. Barton S. Sheffer, St. Joe, celebrated their golden wedding anniversary, March 14.——Dr. Walter W. Lee has assumed his new duties as state epidemiologist for the state board of health, to succeed Dr. Arthur L. Oilar; Dr. Lee has been in practice at Winona, Ontario, Canada.

Cancer Clinic.—Dr. Joseph C. Bloodgood, Johns Hopkins University Medical School, Baltimore, conducted a cancer clinic at St. Margaret's Hospital, Hammond, May 13, for physicians of the Tenth Indiana Congressional District and others. Dr. Bloodgood also addressed a community health meeting at the high school, which was a part of the program of "Civic Week"; other speakers at this meeting were Allen Craig, Chicago, and Father C. B. Moulinier, Milwaukee, president of the Catholic Hospital Association.

IOWA

State Medical Election.—At the annual meeting of the Iowa State Medical Association, Des Moines, Dr. Thomas E. Powers, Clarinda, was elected president; Dr. Michael J. Kenefick, Algona, president elect; Dr. Frederick G. Murray, Cedar Rapids, vice president; Dr. Addison C. Page, treasurer, and Dr. Tom B. Throckmorton, Des Moines, secretary. The next annual meeting will be at Council Bluffs. The association adopted a new plan of conducting business, vesting authority in a board of trustees of three members, to which the house of delegates elected Dr. Vernon L. Treynor, Council Bluffs; Dr. Oliver J. Fay, Des Moines, and Dr. John F. Herrick, Ottumwa, all past presidents of the association.

KENTUCKY

Narcotic Violation.—Dr. William A. Francis, Bowling Green, pleaded guilty, May 18, to violating the Harrison Narcotic Act, it is reported, and was sentenced to one year in jail and to pay a fine of $1,000. The jail sentence, it is said, was suspended.

Hospital News.—The Kosair Convalescent Home for Crippled Children, representing an expenditure of about $200,000, contributed by the public, was formally opened, May 13; white crippled children under 12 years of age, of any creed, are eligible for admission to the home. The Masonic Order will have general supervision over the home.

Society News.—Dr. Adolph O. Pfingst has been elected president of the Louisville Eye and Ear Society for 1926; Dr. Melvin C. Baker vice president, and Dr. Charles C. Maupin, secretary-treasurer.——Dr. John F. Dunn, Arlington, was recently elected president of the Southwestern Kentucky Medical Association; Drs. Claude E. Kidd, Paducah, and George W. Payne, Bardwell, vice presidents, and Drs. James Vernon Pace and James T. Reddick, both of Paducah, secretary and treasurer, respectively; the semiannual meeting in October will be held in Murray.——Dr. Arthur T. McCormack, Louisville, has been reelected president of the Kentucky Conference on Social Work.——Dr. William R. Burr, Auburn, has been elected president of the Third District Medical Society to succeed Dr. Carl C. Howard, Glasgow.

MARYLAND

Arrests for Not Reporting Births.—The state board of health has recommended the prosecution of fifteen physicians in the state and four midwives for failure to report births in accordance with the state law. The announcement was made following the completion of a survey designed to ascertain the efficiency of birth reporting in the state.

Society News.—The Medical Society of the District of Columbia and the Baltimore City Medical Society held a joint meeting in Baltimore, recently, which was addressed by Dr. Charles S. White on "The Unsatisfactory Side of Gallbladder Surgery" and by Dr. Roy D. Adams on "The Ex-Service Man as a Problem in Diagnosis."——The Maryland Psychiatric Society and the Washington Society for Nervous and Mental Diseases held a joint meeting, May 20, at the Chestnut Lodge Sanatorium, Rockville, which was addressed by Dr. William A. White, superintendent, St. Elizabeth's Hospital, Washington, D. C., on "The Language of Schizophrenia."——Dr. Esther L. Richards, Johns Hopkins Hospital, addressed the Baltimore County Medical Society, May 19, at Harlem Lodge, Catonsville, on "Psychologic Aspects of Child Welfare."——Among others, Dr. Martin F. Sloan addressed the West Baltimore Medical Society, May 19, at the West Baltimore General Hospital on "Interesting Pulmonary Symptoms Simulating Tuberculosis."

Johns Hopkins' Fiftieth Anniversary.—Invitations have been sent to 12,000 former students for the fiftieth anniversary of the founding of Johns Hopkins University, October 22-23. The chief event will be the dedication of the new $1,000,000 building of the School of Hygiene and Public Health; Dr. Andrew Balfour, director, London School of Hygiene and Tropical Medicine, will speak at the dedication, and Prof. F. Neufeld, Berlin, director, Institute for Infectious Diseases, will deliver the De Lamar memorial lecture. The governor, Albert C. Ritchie, an alumnus of the university, has appointed a committee of thirty-seven citizens to represent the state at the celebration, and the mayor of Baltimore, a committee of 220 to represent that city. Among other prominent speakers at the functions will be Dr. Ira Remsen, second president of the university and the only surviving member of the original faculty of seven professors; Newton T. Baker, former secretary of war; Dr. Charles R. Bardeen, dean and professor of anatomy, University of Wisconsin Medical School, and Daniel Willard, president, Baltimore and Ohio Railroad and president of the board of trustees of Johns Hopkins University.

MASSACHUSETTS

Dr. Faxon Honored.—About 125 associates and friends of Dr. William O. Faxon, Stoughton, tendered him a complimentary dinner, May 1, in recognition of his public service in Massachusetts and his completion of fifty years in the practice of medicine.

Senate Disapproves Lye Bill.—The bill designed to prevent suffering by means of labeling in a specific manner all caustic or corrosive substances offered for sale was voted down by the Massachusetts state senate, although approved, says the *Boston Medical and Surgical Journal*, by the house. The bill had also been approved by the joint committee on legislation of the medical societies and the committee of the legislature had been so informed. The primary intent of this legislation, the like of which has been passed by many other states, is to prevent the suffering and disability that occurs among children who innocently swallow caustic and corrosive household substances. The Boston editor therefore says about the senate's action: "We wish to go on record that such behavior of a representative body is beyond the comprehension of physicians, who, having no selfish motives, are asking for the cooperation of our lawmakers in efforts to protect the public."

MICHIGAN

Personal.—Dr. Franklin W. Sassaman has been reappointed health officer of the city of Charlotte, making this his seventeenth year of continuous service.——Dr. Starr K. Church has been reelected city health officer of Marshall.——Dr. S. Rowland Hill has been reelected city health director of Lansing for the sixth time.

Clinics for Crippled Children.—During 1925 the Michigan Society for Crippled Children arranged for clinics at which 1,504 crippled children from seventeen different counties were in attendance. The greatest number of children examined by any one clinic was 142 in Houghton County; then 132 at Kalamazoo; 117 at Alpena; 116 at Cadillac, and 114 at Oakland. The society's clinic at Jackson has employed a public health nurse to direct the work, and some of the other large clinics have employed assistants.

Child Health Institute.—The Detroit Department of Health, cooperating with the board of education and other organizations, will hold the first annual child health institute in Detroit, on the twelfth floor of the Hudson Store, the week of June 7; there will be demonstrations of the health work done in the city public schools and lectures daily on prenatal care, infant care, behavior problems, health habits and recreation, and on Friday evening an address by Dr. Hugo A. Freund on "Adding Years to the Average Life."

Society News.—Dr. Martin A. Mortensen, Battle Creek, addressed the Wayne County Medical Society, Detroit, May 18.——Members of the Wayne County Medical Society were invited to attend the annual meeting of the Detroit Dermatological Society at Harper Hospital, May 25.——Dr. William B. Bartlett, Boston, addressed the Berrien County Medical Society, Benton Harbor, April 26, on "Treatment of Diabetes Mellitus in Children," and demonstrated the modern methods of taking basal metabolic rate determinations.——Members of twelve county medical societies in Michigan have agreed to undergo a periodic physical examination; one week after the matter had been presented to the St. Clair County Medical Society, all of its members had been examined.——Dr. Elmer L. Eggleston, chief, medical service, Battle Creek Sanitarium, addressed the Kent County Medical Society, May 26, on "Periodic Physical Examinations."

MISSOURI

License Revoked.—The Missouri State Board of Health, May 6, revoked the license of Dr. William H. Duckworth, St. Clair, it is reported, on a charge of unprofessional conduct. Dr. Duckworth is said to have been indicted by the March grand jury of Franklin County on a charge of having performed an illegal operation.

Largest Medical Reserve Officers' Training Corps.—St. Louis University Schools of Medicine and Dentistry have, according to the *Globe Democrat*, the largest reserve officers' training corps among the medical and dental schools of the United States, the total enrolment being 583. At the commencement in June, 102 members of the graduating classes in medicine and dentistry will be commissioned by the President as first lieutenants in the officers' training corps.

State Medical Election.—At the sixty-ninth annual meeting of the Missouri State Medical Association, St. Louis, May 17-20, Dr. Emmett P. North delivered the presidential address at a general meeting, Wednesday evening; Dr. Jabez N. Jackson, Kansas City, President-Elect of the American Medical Association, and Dr. John A. Witherspoon, Nashville, Tenn., also gave addresses; Dr. Francis Park Lewis, Buffalo, gave an address on "Achievements in the Prevention of Blindness"; Dr. Witherspoon also held a diagnostic clinic, Thursday afternoon, on duodenal and gastric ulcer. The meetings were all held in the auditorium at St. Louis University, except the clinics. The following officers were elected: Dr. William H. Breuer, St. James, president; Drs. George C. Willson, Nevada, Ross A. Woolsey, St. Louis, Francis M. McCallum, Kansas City, Paul F. Cole, Springfield, and Uriel P. Haw, Benton, vice presidents; Dr. George W. Hawkins, Salisbury, treasurer, reelected, and Dr. Edward J. Goodwin, St. Louis, secretary-editor, reelected. The next annual meeting will be at Sedalia.

Personal.—Dr. William L. Bradford, Sedalia, has been elected president of the Missouri Public Health Association; Dr. Elbert L. Spence, Kennett, vice president, and Dr. James Stewart, secretary of the state board of health, secretary.——Dr. Howard M. Smith, Kansas City, has been appointed head of the old City Hospital.——Dr. Porter E. Williams, Boonville, assumed the duties of superintendent of the General Hospital, Kansas City, April 14; Dr. Williams for years has been superintendent at various state hospitals.——Dr. Jule H. Keller, Lancaster, has been elected president of the Schuyler County Medical Society, and Dr. James B. Bridges, Downing, secretary, reelected.——Dr. Evarts A. Graham, Bixby professor of surgery, Washington University School of Medicine, succeeds the late Dr. Albert J. Ochsner, Chicago, as editor of the Year Book of General Surgery of the Practical Medicine Series.——Dr. Isaac N. Parrish Cowgill, has been appointed physician to the Indian schools at Colony, Okla., and has moved to that city.——Dr. Jabez N. Jackson, Kansas City, President-Elect of the American Medical Association, received the honorary degree of doctor of science from Park College at the recent commencement exercises.

NEBRASKA

Hospital News.—Dr. Charles E. Slagle, Alliance, was elected president of the medical staff of St. Joseph's Hospital at the annual meeting, May 7.——The Lanning Memorial Hospital, Hastings, has let the contract for construction of a $75,000 maternity unit.

Personal.—Dr. Frank L. Frink, Newman Grove, has been elected mayor for the third consecutive time.——Dr. Arno A. Bald, Platte Center, has been reappointed county physician of Platte County.——Dr. Russell J. Murdoch has been reelected mayor of Blair.——Dr. Clement L. Martin, Omaha, has become a member of the permanent staff of the Mayo Clinic, Rochester, Minn.——Dr. Ethel M. Laybourne has been appointed superintendent of the Bryan Memorial Hospital, Lincoln.

Society News.—The Nebraska Association of Medical Directors, representing twelve insurance companies, was organized, May 12, at Omaha, with Dr. Albert R. Mitchell, Lincoln, president; Dr. Arthur C. Stokes, Omaha, vice president, and Dr. Reuben A. Moser, Omaha, secretary-treasurer. ——Dr. May L. Flanagan, Lincoln, was elected president of the Nebraska Association of Medical Women, May 11, at Omaha; Dr. Charlotte P. Seiver, Fremont, vice president, and Dr. Ruth A. Warner, Lincoln, secretary-treasurer.

NEW YORK

Personal.—Dr. Clarence Floyd Haviland, Albany, has resigned as chairman of the state hospital commission to become superintendent of the Manhattan State Hospital at Wards Island, July 1, and Dr. Frederick W. Parsons, superintendent of the Buffalo State Hospital, has been appointed to succeed Dr. Haviland as chairman of the state hospital commission.——Drs. Moses Keschner and Israel S. Wechsler have been appointed attending neurologists to the Montefiore Hospital, New York.——Dr. Ezra R. Bridge has been appointed superintendent of the Monroe County Sanatorium, Rochester.

Progress in Rehabilitating State Hospitals.—Governor Alfred E. Smith has issued a pictorial pamphlet to show the progress in rehabilitating the state hospitals and charitable institutions, and what is being done with the $50,000,000 bond issue which the people authorized at the 1923 election. There is a picture of additions to the Hospital for Crippled Children at West Haverstraw which will provide for 200 patients and sixty employees; another of the Harlem Valley Hospital, where some buildings are already occupied and where these bonds will provide 1,204 new patients' beds. Additions to Letchworth Village will provide 400 additional patients' beds for the infirm female inhabitants; a new hospital for sick inmates, a new administration building and new homes for attendants are under construction. There is a picture of the Creedmoor State Hospital for the Insane where buildings have already been erected and others are under construction; which will provide 1,044 additional patients' beds and relieve the overcrowding at Brooklyn State Hospital. There is a drawing of an entirely new hospital to be built in Rockland County, which will provide 3,800 beds and cost about $10,000,000. During 1924 and 1925 there have been added 8,066 new beds for patients in state institutions. The governor says that state officials are carrying on this great program with all possible energy; that the entire plan, only a part of which is shown in this pamphlet, has been carefully considered, and that it would have been impossible to lay out any such building program had there not been the assurance that funds would be available each year. From these studies of the hospital situation, the needs of the state in beds up to the year 1935 have been determined; the state can now say how large an institution ought to be and where it ought to be. Less than half of the $50,000,000 bond issue, as yet, has been expended.

New York City

Fifteen Chiropractors in Court.—Fifteen chiropractors were arraigned in Chief Magistrate McAdoo's Court, April 13, on charges of violating the "health law"; each was released on $500 bail. The charges were made by policewomen of the city to whom the chiropractors are said to have administered treatment recently.

Steel Work at Medical Center Completed.—Gen. William Barclay Parsons, chairman of the Joint Administrative Board for the $11,000,000 structure which will house the Presbyterian Hospital and the College of Physicians and Surgeons at Broadway and One Hundred and Sixty-Eighth Street, had the honor, May 24, of driving the last rivet in the steel framework of the building.

Society News.—Dr. Ralph Pemberton, Philadelphia, took part in a symposium on arthritis before the Medical Society of the County of New York at the Academy of Medicine, May 24; Dr. Pemberton's subject was "Significance and Use of Dietetics in the Treatment of Arthritis."——Dr. Joseph F. Ward has been nominated president for the coming year of the Brooklyn Society of Internal Medicine, and Dr. Joseph G. Terrence, secretary.——At the annual meeting of the Women's Medical Association, May 12, at the Women's City Club, Dr. Eleanor Vanness Van Alstyne was elected president; Drs. Mary A. Reesor and Sophie Rabinoff, vice presidents; Dr. Allis Hascall, treasurer; Dr. Isabelle Beck, recording secretary, and Dr. Elsie A. Barthel, corresponding secretary.

Hospital News.—Two new departments will be added to the dispensary of the Knickerbocker Hospital on completion of its new $500,000 emergency unit next fall; they will be a prenatal clinic and a nose and throat clinic.——Raquel Meller, Spanish singer and dancer, gave a special performance recently to aid the St. Mary's Free Hospital for Children.—— St. Peter's Hospital, Brooklyn, has purchased the adjoining building of the home for the aged, and a new wing will be built on the site.——The staff of the new maternity department of the Knickerbocker Hospital includes Dr. George L. Brodhead, visiting obstetrician; Drs. Edwin G. Langrock and Ralph Barrett, associate obstetricians, and Drs. Walter T. Stenson and Donald M. Campbell, assistant obstetricians. ——The Hospital for Joint Diseases formally dedicated its country home at Far Rockaway, May 16. This mansion, representing a gift, including its endowment of $1,100,000, by Alfred Heinsheimer, has been rearranged to accommodate 100 patients; it stands on 14 acres of ground at Breezy Point.—— The Memorial Hospital, Central Park West at One Hundred and Fifth Street, celebrated the completion of a new wing, May 12.

OHIO

Report of Military Committee.—The annual report of the military committee of the Ohio State Medical Association shows that there are 447 physicians commissioned in the medical reserve corps, and 195 dentists, of whom 71 and 24, respectively, were commissioned during 1925. The report says that 3,000 Ohio physicians, or about 70 per cent of the membership of the state medical association, served during the World War, and that during the Civil War 10 per cent of the entire membership of the Ohio State Medical Association was killed in action. Applications are needed to complete the general mobilization plans formulated by the general staff of the war department.

Society News.—Dr. Robert B. Cofield, associate professor of orthopedic surgery, University of Cincinnati School of Medicine, and Dr. Clarence A. Mills, assistant professor of medicine, University of Cincinnati College of Medicine, addressed the Drake County Medical Society, May 8, on "Cause and Treatment of Back Pains" and "Significance and Methods of Treatment of Hemorrhages."——Dr. Charles F. Hoover, professor of medicine, Western Reserve University School of Medicine, Cleveland, addressed the Summit County Medical Society, Akron, May 18, on "Bedside Observation on Respiration."——Dr. Howard M. Clute, Boston, addressed the members of the Academy of Medicine of Toledo and Lucas County, May 7.——The Academy of Medicine of Toledo and Lucas County announced a course of lectures on "The Heart" to be given June 1-5, by Dr. Frank N. Wilson, University of Michigan Medical School, Ann Arbor.

OKLAHOMA

Personal.—Dr. Laurence H. Carleton, formerly of Tulsa, has accepted an appointment at the Henry Ford Hospital, Detroit.——Dr. Ira C. Wolfe has been appointed city physician of Muskogee to succeed Dr. Charles E. White, resigned.——Dr. Finis E. Sadler has been appointed city physician of Henryetta.——Dr. William E. Floyd has been appointed city superintendent of health of Muskogee.

Society News.—The Muskogee County Medical Society held an open meeting recently at the Presbyterian Church, Muskogee, conforming to the plans of the publicity committee of the state association. The church was crowded with laymen and physicians. Dr. LeRoy Long, dean, University of Oklahoma School of Medicine, gave an address on "The Relations of Scientific Medicine to the Community."

PENNSYLVANIA

Everyday Problems in Medicine.—Dr. Thomas McCrae, Magee professor of the practice of medicine and clinical medicine, Jefferson Medical College, Philadelphia, will address the physicians of seven counties of northwestern Pennsylvania at Warren, June 21, on "Everyday Problems in Medicine."

Personal.—Dr. Julian Ellis Kurtz, who recently retired from practice of medicine, has donated to the Berks County Medical Society 400 volumes, mostly on subjects related to diseases of the eye, ear, nose and throat. Dr. Kurtz is said to have been a member of the society since his graduation from Jefferson Medical College in 1880.

Hospital News.—A campaign to raise $6,000,000 will be undertaken soon for the purpose of increasing the Presbyterian Hospital, Pittsburgh, from a 150 bed institution to a 600 bed unit in the Pittsburgh Medical Hospital group.——Providence Hospital, New Brighton, is conducting a campaign for $250,000.——St. Christopher's Hospital for Children, Philadelphia, recently established a neuropsychiatric clinic in connection with the department of preventive medicine; the staff of the new clinic consists of Dr. James J. Waygood, psychiatrist, Esther K. Rosen, Ph.D., psychologist, Edwin Westburgh, psychologist, and Fannie E. Teller, psychiatric social worker.

Philadelphia

Bequest to Jefferson Medical College.—The late William Potter, president of Jefferson Medical College and Hospital, bequeathed $50,000 in his will to Jefferson Medical College.

University News.—Dr. Lillian K. P. Farrar, New York, will address the Alumni Association of the Women's Medical College of Pennsylvania at the seventy-sixth anniversary of the college, June 10-11, on "Reaction of Tissues to Radium Treatment in Cancer of the Cervix and the Importance of Lacerations in This Location."

Hospital News.—Rush Hospital for Consumptives opened a new ward for advanced cases, May 27, which was presented by Charles P. Hall, president of the city council, in memory of his wife, who died twenty-five years ago.——The drive for $1,000,000 to build an addition to the Bryn Mawr Hospital was opened, June 2, with a dinner at the Bellevue-Stratford; more than 600 persons were present; Samuel Rea, chairman, executive committee in charge of the drive, presided. The drive will close, June 11.

Periodic Health Examinations.—Our correspondent writes that the long-awaited joint drive of the medical profession and the laity against cancer, nephritis and preventable diseases opened at a public meeting at the new Philadelphia County Medical Society Building, June 1, which was presided over by Mr. Alba B. Johnson, the new president of Jefferson Medical College; among the speakers were Dr. Orlando H. Petty, chairman, committee on periodic health examinations, Philadelphia County Medical Society; Dr. John Norman Henry, past president of the state medical society, and Dr. Harry Toulmin.

Navy Program.—The Medical Department of the U. S. Navy presented the entire program for the May 26 meeting of the Philadelphia County Medical Society, Capt. Arthur W. Dunbar, assistant surgeon general, representing Admiral E. R. Stitt, who was absent on account of illness. Among others who took part in the program were Lieut. Comdr. Walter A. Bloedorn, whose subject was "Periodic Health Examinations," and Capt. Richmond C. Holcomb, who gave an illustrated lecture on "Medical Officers Afloat." Other speakers were Capts. George T. Smith and James F. Leys, and Lieut. Comdrs. Abraham H. Allen, Joseph J. A. McMullin, Carrol R. Baker, George A. Eckert and John M. McCombs. Members of the reserve corps of the army and navy were requested to attend the meeting in uniform.

SOUTH DAKOTA

State Medical Election.—At the annual meeting of the South Dakota State Medical Association, Aberdeen, May 19-20, Dr. Theodore F. Riggs, Pierre, was elected president; Drs. Silas M. Hohf, Yankton, Nelson K. Hopkins, Arlington, and Lorenzo N. Grosvenor, Huron, vice presidents, and Dr. John F. D. Cook, Langford, secretary-treasurer.

Personal.—Dr. Francis E. Clough, Lead, has been appointed a member of the state board of health and medical examiners to succeed the late Dr. John W. Freeman, Lead.——Dr. William F. Keller, who has been connected with the board of health of Sioux Falls for nineteen years, has resigned, and Dr. T. J. Billion has been elected to fill the vacancy.——Dr. George M. Boteler, health officer of the board of health of Aberdeen for several years, has resigned, and will engage in practice in St. Louis.

TEXAS

University News.—The University of Texas has reorganized its department of botany to provide for the development of courses in bacteriology, and changed its name to the department of botany and bacteriology; I. M. Lewis, Ph.D., is the professor of bacteriology.

Personal.—Dr. Richard McCormick, Waco, has been reappointed county health officer for two years.——Dr. C. W. Gray, Brownwood, has been appointed county health officer to succeed Dr. Thomas B. Bailey, who recently resigned to become the city health officer of Brownwood.——Dr. Alfred L. Ridings has been appointed city health officer of Sherman, to succeed the late Dr. James A. Swafford.——Dr. Herschel F. Connally has been elected mayor of Waco.

State Medical Election.—At the annual meeting of the Texas State Medical Association, Houston, May 24-27, Dr. William Keiller, Galveston, was elected president; Dr. Joseph Gilbert, Austin, president-elect; Drs. Calvin R. Hannah, Dallas, Malone Duggan, Laferia, and James Greenwood, Houston, vice presidents, and Dr. Holman Taylor, Fort Worth, secretary. The campaign of publicity and law enforcement which is being conducted by the state medical association was enthusiastically endorsed at this meeting and ordered to be continued with vigor. The next meeting will be held at El Paso.

VIRGINIA

Society News.—Dr. Claude C. Coleman, Richmond, addressed a joint meeting of the Warwick County Medical Society and the Peninsula Dental Society at Newport News, May 10, on "Facial Pain."——Dr. Edward Howe Miller, Jr., Danville, has been elected president of the South Piedmont Medical Society, and Dr. George A. Stover, South Boston, secretary-treasurer, reelected.——At the annual meeting of the Virginia Society of Otolaryngology and Ophthalmology, Charlottesville, April 27, Dr. Clifton M. Miller, Richmond, was elected president; Dr. Charles S. Dodd, Petersburg, vice president, and Dr. Fletcher D. Woodward, Charlottesville, secretary-treasurer.——The Medical Association of the Valley of Virginia met in Harrisonburg, May 27; among others, Dr. Hugh H. Young, Baltimore, gave an address.——At the annual meeting of the Walter Reed Medical Society, Yorktown, May 21, Dr. John W. C. Jones, Newport News, was elected president; Dr. John M. Henderson, Williamsburg, first vice president; Dr. James E. Marable, Newport News, treasurer, and Dr. Landon E. Stubbs, Newport News, secretary; on the second day, the members went to Fort Eustis to see demonstrations in the treatment of fractures, then returned to Yorktown, and were addressed by Dr. Southgate Leigh, Norfolk, on "The Importance of Periodic Medical Examinations," and by Dr. William Wayne Babcock, Philadelphia, on "Surgery in Relation to Gallbladder Diseases."

WEST VIRGINIA

Personal.—Dr. David Berman has been appointed health officer of Marshall County; Dr. Berman was formerly instructor in public health and hygiene at Antioch College, Antioch, Ohio.——The governor has appointed Dr. Mortimer D. Cure, Weston, superintendent of the Weston State Hospital.——Dr. John W. Niedermeyer has been appointed city health officer of Benwood, succeeding Dr. William B. Hartwig, resigned.

Society News.—Dr. William T. Henshaw, state commissioner of health, addressed the Kenawha County Medical Society, recently, on illegal practitioners in West Virginia. ——Dr. Thomas R. Boggs, assistant professor of medicine, Johns Hopkins Hospital, Baltimore, addressed the Academy of Medicine of Parkersburg, recently, on "Biliary Disease." ——The Webster-Nicholas Medical Society has been reorganized so as to include physicians of Braxton County and named the Central West Virginia Medical Society; Dr. Charles Frederick Fisher, Richwood, was elected president, and Dr. Homer S. Brown, of Sutton, secretary-treasurer.

HAWAII

Personal.—Dr. George S. Bliss has resigned as superintendent of the Waimano Home, Hawaii, to accept a position as superintendent of the Pacific Colony, a new institution for the feebleminded at Spadra, Southern California.

Annual Health Report.—The death rate in Hawaii for the year ending June 30, 1925, a report of which has just been received, was the lowest in the history of the territory, 12.74 per thousand; the infant mortality rate was 103.59 per thousand, also the lowest on record. The board of health credits this record to the work of the public health nurses in the districts, to the work of the Palama Settlement in the city of Honolulu, and to the inauguration of clinics for mothers and children by physicians and nurses on many plantations. There were no cases of smallpox in the territory during the year, and only two cases of human plague, both of which were fatal, and fourteen cases of rodent plague. In the plague eradication campaign, 176,593 rodents were obtained, and of these 169,826 were examined microscopically for plague. The principal public health problem was brought about by a strike of the Filipino laborers; there was a number of deaths due to a lack of proper food and housing and overcrowding following the strike, but the strikers' camps were carefully inspected and a typhoid epidemic was averted.

GENERAL

National Association for Study of Epilepsy.—The twenty-fifth annual meeting of this association will be held at the Waldorf-Astoria, New York, June 7-8, under the presidency of Dr. George Kirby Collier, Rochester, N. Y.; among others, Drs. Stanley Cobb and William G. Lennox, Harvard Medical School, Boston, will discuss "Some Clinical and Laboratory Observations with Reference to Convulsions"; Dr. Leland B. Alford, St. Louis, "The Epileptic Convulsion Considered as a Type of Extrapyramidal Disturbance"; Dr. Smith E. Jelliffe, New York, "Narcolepsy, Hypnolepsy, Pyknolepsy," and Dr. Otto Wuth, Johns Hopkins University Medical Department, "Rational Bromide Treatment—A New Method for Its Control." In the same program is announced the eighty-second annual meeting of the American Psychiatric Association at the Waldorf-Astoria, June 8-11.

Medical Library Association.—The twenty-ninth annual meeting of this association will be held at Ann Arbor, Mich., June 7-9. Dr. Hugh Cabot, dean, University of Michigan Medical School, will give the opening address, and Dr. Frederick Tice, Chicago, president of the Medical Library Association, will give the response. Among others, the librarian of the University of Michigan, Mr. William W. Bishop, will speak on "The Present Status of International Bibliography in the Field of Science." There will be a reception, Tuesday evening, at the William L. Clements Library, when Dr. Aldred S. Warthin, director, pathologic laboratory, University of Michigan, will demonstrate some unusual features in the Lewis Stephen Philcher collection of rare and early books in medicine, which collection will be on exhibition in the library. The business meeting will be Tuesday afternoon.

Prize Contest in Physical Therapy.—The American College of Physical Therapy announces a contest open to physicians, physicists and fourth and fifth year students in recognized medical schools in which the six prizes will be physical therapy equipment, totaling a value of more than $2,500. The thesis, which must concern some branch of physical therapeutics, must not exceed 2,000 words, and must involve some problem of research, and be typewritten, and double-spaced on one side of the paper only. Theses must be submitted to the chairman of the committee, Dr. Disraeli W. Kobak, 30 North Michigan Avenue, not later than October 15. The winners will be announced at the Clinical Congress at the Drake Hotel, Chicago, October 18-23. The judges will be selected from the faculties of several medical schools, and will not be connected with the American College of Physical Therapy.

International Conference on Oil Pollution of Waters.—The state department announces that former Senator Joseph S. Frelinghuysen of New Jersey will head the American delegation to the International Conference of Experts on Oil Pollution of Navigable Waters, which meets in Washington, June 8. Congress, in 1922, authorized the President to call a conference of maritime nations with a view to the adoption of effective means for the prevention of pollution of navigable waters. The use of oil as fuel by vessels and the evils that result, including pollution of bathing beaches, harbors and shore property, and the consequent detriment to property and health, shore recreation, increased fire hazard and injury to the fishing industry and wild life, will be discussed. It is hoped that the forthcoming conference may prepare plans for an agreement of maritime nations to control oil pollution. The following countries have indicated their acceptance of invitations to attend the conference: Belgium, Denmark, France, Germany, Great Britain, Greece, Italy, Japan, Netherlands, Norway, Spain and Sweden.

Society News.—At the meeting of the American Gynecological Society, May 20-22, Dr. Arthur H. Curtis, Chicago, was elected president; Drs. Frank W. Lynch, San Francisco, and J. R. Goodall, Montreal, vice presidents; Dr. Fred L. Adair, Minneapolis, treasurer, and Dr. Floyd E. Keene, Philadelphia, secretary.——Mrs. E. P. Gengenbach, Denver, was installed as president of the Women's Auxiliary of the American Medical Association at the recent annual meeting in Dallas, Texas; Mrs. John O. McReynolds, Dallas, was elected president elect.——At the annual meeting of the American Roentgen-Ray Society, Detroit, May 18-22, Dr. Alexander H. Pirie, Toronto, was elected president elect, Dr. Patrick F. Butler, Boston, and Edward L. Jenkinson, Chicago, vice presidents, Dr. William A. Evans, Detroit, treasurer, and Dr. Charles L. Martin, Dallas, Texas, secretary. ——At the eleventh annual convention, Philadelphia, May 25, of the American Association of Industrial Physicians and Surgeons, Dr. William A. Sawyer of the Eastman Kodak Company, Rochester, N. Y., was elected president; Dr. Clare F. N. Schram, of the Fairbanks-Morse Company, Beloit, Wis., and Dr. Robert S. Quinby of the Hood Rubber Company, Watertown, Mass., vice presidents, and Dr. Frank L. Rector, editor, *Nation's Health*, Chicago, secretary-treasurer (reelected).

Opposition to Strengthening Narcotic Law.—At a hearing held by the Ways and Means Subcommittee of the House of Representatives, May 24, vigorous opposition was made to the Treasury Department bill to strengthen the Harrison Narcotic Law by the American Pharmaceutical Association, represented by Samuel L. Hilton, Washington, D. C., and by the American Medical Association, represented by Dr. W. C. Woodward, Chicago. Mr. Hilton sharply criticized the proposed provision which would require pharmacists to determine whether a physician's prescription was or was not issued in the course of professional practice and to refuse to fill such prescriptions as the pharmacist may reasonably suspect of not having been so issued. He said, "Why should the druggist be jailed for following orders?" He opposed the provision for keeping records—additional to those now required—because it would increase the cost of drugs to the people; he asserted that it would take from three to six hours to find out whether the ordinary prescription is lawful. "If this requirement is enacted into law," Mr. Hilton said, "I shall surrender my narcotic license as a wholesaler. I would decline absolutely to fill such a prescription and run a chance of violating the law. The keeping of records has gotten to be a bugaboo for the druggists. I spend three days out of the month in keeping my records. The extra help needed to keep the proposed record would not be justified by the business." Dr. Woodward, representing the American Medical Association, stated that further regulation of the narcotic traffic by the federal government would jeopardize the present antinarcotic laws, and that the determination of who may practice medicine and who may dispense drugs belongs to the states. "But that does not leave Congress helpless," Dr. Woodward said. "It can cooperate with the states. At present there are twenty-nine states and three territories which have specific regulations authorizing the revocation of licenses of physicians known to be drug addicts. We doctors approve of regulation through ordinary channels, through the states as at present, but we regard the proposed legislation as unwise." "With respect to this refusal of registration to doctors known as drug addicts," Dr. Woodward continued, "the question arises, What is a drug addict, and how is that to be determined? The same penalty for a violation by a narcotic pedler would be laid on a physician

who commits a minor infraction of the law, to wit, for forgetting to renew his license for a few days after it expired, and writing a prescription in that period. He would lose his practice for a year. Such a regulation would be a club held over the heads of doctors to compel them to compromise cases instead of defending themselves in court. If a trivial charge was placed against a doctor, he would readily compromise rather than run the chance of having his reputation questioned by an appearance in court on the charge of violating the Harrison act."

Dr. Woodward completed his testimony with a statement that the bill would not reach narcotic pedlers, and with a recommendation for a greater activity by the states in enacting narcotic laws directed at the addict. Horace W. Bigelow, Detroit, counsel for the American Drug Manufacturers' Association, and for Parke, Davis and Company, opposed the bill from the practical view of the manufacturer. He asserted that the expense of record keeping was enormous. "I think I can safely say," he said, "that our record keeping amounts to more than $100,000 a year. Now this bill would force us to duplicate the very records we are keeping. When we keep a record of sales to our various distributors, that record is also one of purchases for them. The bill would make us keep another record of purchases at an additional cost of perhaps $25,000 a year."

LATIN AMERICA

Next Latin American Medical Congress.—The official notice of the seventh Latin American Medical Congress has been issued, the date, March 15, 1927, at the City of Mexico. Dr. Angel Brioso Vasconcelos is secretary of the executive committee.

Personal.—Dr. G. Aráoz Alfaro, chief of the public health service of Argentina, has sailed for Europe as the representative of Argentina in the League of Nations' international health conference and the international public health office at Paris. ——*The Brazil-Medico* relates that Dr. Carlos Chagas, chief of the public health service of Brazil, has been notified that an honorary degree is to be conferred on him by the University of Paris at its convocation exercises in November.——The *Folha Medica* of Rio de Janeiro announces the arrival there of Drs. Allen Freeman and James Doull, who have been invited to deliver a course of lectures in the newly founded school of public health, as masters of sanitary administration.——The Academia Nacional de Medicina of Mexico has elected to honorary membership Dr. F. Lagrange, professor of ophthalmology, Bordeaux.——Dr. Ramón Goya of the Argentine cruiser *Buenos Aires* was tendered a banquet recently by the local medical society of Seville, Spain.—— Dr. Varela Zequeira has been elected president of the national Cuban Medical Association to fill the vacancy left by the death of Dr. Juan Guiteras, who was the first president of the newly organized association. Its official title is the Federación Médica de Cuba. Dr. A. A. Aballí is president of the executive committee. The *Crónica Médico-Quirúrgica* for January is entirely devoted to the new organization, its aims and history to date.

FOREIGN

China Medical Association.—The eighteenth biennial meeting of the China Medical Association will be held at Peking, August 31-September 8, in the buildings of the Peking Union Medical College. A preliminary announcement from the chairman of the publicity committee states that the background and "motif" of the meeting will be public health, to which subject many of the general and public meetings will be devoted. The mornings will be devoted to sectional and general meetings; the afternoons to demonstrations and clinics, and the evenings to public lectures. A trip to the Great Wall of China has been arranged for the day following the conference and to other interesting places.

The German Health Week.—Extensive preparations were made for the national Health Week and exposition in Germany in April. Our exchanges state that hundreds of thousands of persons were reached by the health propaganda through the press or radio or moving pictures. Lay members of parliament expressed publicly their appreciation of the efforts of the profession to enlighten the public in matters of health. Gollwitzer of Munich, in particular, emphasized the necessity for eradicating quackery, but the *Deutsche medizinische Wochenschrift* calls attention to the way in which quackery—"radium compresses," etc.—crowded into the limelight even in the hygiene exhibition. The exhibits portraying the evils of alcohol and tobacco were stationed in the gallery above, while on the main floor booths for sale of both were attractively arranged. The government of Saxony is offering prizes to children for articles on "What the Health Week Brought to Me."

International Congress of Sexology.—The International Society of Sexology announces that its first congress will be held in Berlin, Germany, Oct. 11-15, 1926. In the scientific sections question in relation to sexual life will be discussed in regard to society, economic life, hygienics, medicine and law. The principal problems before the congress will be referred in part to committees; other questions will be allowed free discussion. The announcement, which states that the society has been completely reconstructed since the World War, gives a list of prominent members in various countries, including Lépine, Policard and Pézard of France, Recasens, Madrid, Almkvist, Stockholm, Crew, Edinburgh, Freud, Vienna, Leeuwen, Amsterdam, K. Sand, Copenhagen, C. B. Davenport, New York, and Bertrand Russell, London, besides other leaders in sexology from these and other countries. Inquiries concerning the congress should be addressed to Dr. Moll, Berlin W., Kurfürstendamm 45.

Government Services

Permanent Buildings for Army Hospital

Carrying an appropriation of $2,000,000 for continuing the construction of additional permanent buildings at the Walter Reed Hospital, Washington, D. C., the general deficiency bill has passed the House of Representatives. This appropriation authorizes the continuance of construction of additional buildings at the Walter Reed Hospital, to take the place of temporary wooden structures which have, for several years, been in use. A recent survey indicates that the foundations of the present temporary structures are found to be unsafe. Temporary repairs have been made and will continue to be made pending the substitution of the permanent structures authorized by the present appropriations.

Navy Personals

Lieuts. Waldo E. Golden, Edras J. Lanois, Wilbur O. Manning, George L. McClintock and Ashton E. Neely, Medical Corps, U. S. Navy, have been qualified for promotion to the rank of lieutenant commander.——Lieut. Comdr. Fenimore S. Johnson, Naval Hospital, New York, has been ordered to temporary duty in attendance on a course of instruction at the New York Post-Graduate Medical School and Hospital.—— The following medical officers have tendered their resignations: Lieuts. Risden J. DeFord, Merrill R. Fox, McClure Scott and William H. Turnley; a later report includes also Lieut. Alan J. Chenery and Lieuts., junior grade, David L. Beers, Frederick S. Foote, and Howard E. Hill.

Appointments and Resignations in Veterans' Bureau

The following changes in personnel in the U. S. Veterans' Bureau are noted in the *Medical Bulletin* for May:

Appointments:

Dr. Louis K. Henschel, specialist in neuropsychiatry, full-time basis, assigned to the regional office in New York.
Dr. Arthur E. Rogers, medical officer (roentgenology), assigned to the hospital at Fort Lyon.
Dr. Hyman D. Shapiro, as assistant medical officer, part-time basis, central office, Washington, D. C.
Dr. Oscar O. Jones, as attending specialist in roentgenology, part-time basis, regional office at Little Rock, Ark.
Dr. Claudius M. Capps, eye, ear, nose and throat specialist, Hospital no. 103, Aspinwall, Pa., Feb. 16, 1926.
Dr. Miles F. Daubenheyer, examiner at regional office, Omaha, Feb. 2, 1926.
Dr. Manuel G. Morales, medical examiner at regional office, San Juan, Porto Rico, Feb. 13, 1926.
Dr. Ira J. Tatum, specialist at regional office, Kansas City, Mo., Feb. 15, 1926.

Resignations:

Dr. L. W. Elwood, as medical examiner at regional office, Omaha, Feb. 15, 1926.
Dr. Carroll Francis at Hospital no. 102, Livermore, Calif., Feb. 28, 1926.
Dr. John L. Hemstead, as medical examiner at regional office, Albany, N. Y., Feb. 28, 1926.
Dr. Frank W. Kern, at regional office, Louisville, Ky., as examiner in general medicine and surgery.
Dr. William B. Lunsford, at Hospital no. 52, Boise, Idaho, Feb. 10, 1926.
Dr. Earl C. MacCordy, at Hospital no. 103, Aspinwall, Pa. (ill health), Jan. 31, 1926.
Dr. Joseph R. Plant, as examiner on claims and rating board, regional office, Sioux Falls, S. Dak., Jan. 15, 1926.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 15, 1926.

Cause of Mule Spinners' Cancer

The departmental committee appointed by the home secretary to consider the evidence bearing on the occurrence of "Epitheliomatous Ulceration Among Mule Spinners" has presented its report. In the opinion of the committee, the evidence is strongly in favor of the view that this form of cancer is "due to the prolonged action of mineral oils." In other words, this cancer is an industrial hazard. The committee discusses "the substitution of an oil which is innocuous and, at the same time, suitable as a lubricant, due regard being paid to the high rate at which the spindles run." The difficulty, however, is to find the oil, and this is likely to be a prolonged task, since a double problem is involved—that of obtaining innocuous oils and that of blending these innocuous oils so as to get the desired results. In the meantime, the next most obvious remedy is to prevent the oil from coming into contact with the worker. Research is required in this matter, as it is very difficult to prevent "splash" from the bearings. The committee mentions various forms of guard, and speaks with approval of one which consists of a strip of felt or fabric attached to the inside of the wooden door in front of the bolster plate, and projecting vertically about five-eighths inch above the level of the latter plate. "Protective clothing" is not thought to be desirable for a variety of reasons, but constant cleanliness on the part of mule spinners is certainly a safeguard. Further, medical examination at intervals is necessary. The committee recommends, in the first instance, a voluntary system of examination; but if the voluntary system does not result in at least 90 per cent of the workers concerned presenting themselves for each examination, regulations should be made under the factory acts for compulsory examinations. Examinations should take place at least every four months at the factory. They should include every worker in the mule spinning room who is 30 years of age or over.

Cancer Research

At a quarterly meeting of the council of the Royal College of Surgeons of England, Sir John Bland Sutton (president) in the chair, the Walker prize of $500 was awarded to Dr. William Ewart Gye in recognition of his work in advancing the knowledge of the pathology and therapeutics of cancer during the last five years. The award was made in pursuance of the following report from the committee appointed to advise the council in the matter: "The work of Dr. Gye, which has been very materially assisted by the optical research of Mr. J. E. Barnard, F.R.S., promises to throw light on the hitherto unsolved problem of the causation of malignant diseases. Taking as his starting point the pioneer work of Peyton Rous on fowl sarcoma, Dr. Gye produced from this tumor, by different methods, two fluids. Neither of these fluids when inoculated alone produced a tumour, but an inoculation of the mixed fluids in a healthy fowl was followed by the appearance of a sarcoma. The experimenter inferred in his further work that to produce a malignant growth two factors are necessary: first, a living virus which appears to be of extreme minuteness, and, second, a chemical factor peculiar to each species of animal and effective only in that species. Dr. Gye has succeeded in cultivating this virus in vitro. Further, by a series of substitution experiments, he has shown that there can be obtained from human carcinoma and from malignant tumors of the rat and mouse a virus capable of acting with the 'specific factor' of the fowl to cause fowl sarcoma. These experiments, pursued with great patience and acumen over a long period and still in progress, suggest new and hopeful lines of attack on the problem of the cause of malignant disease. Though it cannot yet be said that they have found practical application, they have already given to cancer research such a great stimulus, and such a new direction, as to justify the committee in recommending Dr. Gye for the Walker prize."

Pushing Osteopaths

Notwithstanding the government declaration, all members of parliament have received from the British Osteopathic Association a statement setting out its case and asking "for protection to develop the principles of osteopathy" so that eventually osteopaths "may take their rightful place in the practice of healing." The association asks for a charter for a "British College of Osteopathy."

British Optical Convention

The British Optical Convention has been held at the Imperial College of Science and Technology, South Kensington. It was formally opened by the prime minister. After recalling the predominance of British work in the industry until the latter part of the nineteenth century, Mr. Baldwin outlined the causes that led to our backward position when the Great War came, and caused the government to initiate steps to safeguard optical production and to encourage research. Despite postwar difficulties, British workmanship was now turning out articles that were recognized everywhere for their technical perfection.

The president of the convention, Sir Frank Dyson, astronomer royal, said that the optical industry was almost synonymous with the advance of knowledge and the progress of science. He thought we could say now that our optical manufacturers could make the staple articles—the lenses and the binoculars, and so on—as well as anybody else, and that when they came to those scientific instruments which required a great deal of skill, but which offered very little pecuniary recompense to the optician, they could rely on them to produce what they required. While it could not be asserted that Britain held the preeminent position that it did in the early days of the science, the industry could look back with pride on its achievements and progress during the last twelve years. In 1912, Germany was supplying 60 per cent of the optical glass being used in this country, against 30 per cent made in France and 10 per cent of our own manufacture. When the war made us dependent on our own efforts, the potentiality of the British industry was well shown, and by 1918 the home demand for optical glass for all purposes, which included many new types of lenses and optical instruments requiring glasses of special optical properties, was being met by supplies of which 95 per cent was manufactured in this country. From France came the remaining 5 per cent. At that time we were making 9 tons of optical glass each month. Since the war, owing to the decreased demand, the production had, of course, been much less, but the requirements of British opticians were being met in variety of type and excellent quality.

No convention has been held since 1912, owing to the war, and the exhibition of the convention illustrates developments that have taken place in optical science and manufacture during the last fourteen years. These include new instruments and modifications or new applications of existing instruments. The optical glass industry is now carried on by three firms in this country compared with only one firm before the war, and more than a hundred different varieties of such glass are now produced. The quality of the glass is said to be not merely equal to that obtainable from other sources, but in some respects better, particularly in the matter of transparency. The instrument designed by Mr. J. E. Barnard and Dr. Gye of the National Institute for Medical Research for examining

filter-passing virus was shown. The existing type of microscope has been modified for the purpose, and the optical arrangements adopted are also of an entirely new kind, ultraviolet rays being used for the examination of the organisms. The exhibits shown by the Refraction Hospital include a newly designed instrument for measuring the field of vision of the eye, and detecting the presence of any disease impairing it. An instrument has been contrived for training a "lazy" eye back to a state of efficiency. The improvements in lenses include a trifocal lens. This form of lens is intended to benefit the sight of old persons at three different distances. A lens is also shown devised to cut off hurtful rays without the use of tinting. The British Research Association for the Woollen and Worsted Industries has an exhibit which illustrates the work it is doing as a contribution toward the formation of an international standard of fastness for dyes. Progress is being made toward the goal aimed at, though this cannot yet be said to have been reached. A new method of photographic land surveying—the parallacter system—is brought to notice by Mr. J. W. Gordon. It involves the use of a special photo-theodolite and of a comparator, and advantages both of cheapness and of facility are claimed for it in comparison with other photographic surveying.

The "Royal Hospitals": The "Spital Sermon"

The annual ceremony in connection with the "Royal Hospitals" is one example of the medieval customs in which this country is so rich. The Easter banquet took place at the Mansion House following the preaching of the "Spital Sermon" at Christ Church, Newgate Street, earlier in the day. A large and distinguished company, which included many representatives of the corps diplomatique, accepted the invitation of the lord mayor and the lady mayoress. Proposing the toast of "Prosperity to the Royal Hospital," the lord mayor said these numbered five. St. Bartholomew's and St. Thomas' were dedicated to the treatment of the sick, Christ's to the education of the young, Bethlem to the alleviation of the insane, and Bridewell also to the education of the young, and, in modern times, to the correction and reclamation of unruly apprentices. St. Bartholomew's dated as far back as 1123. The others were founded, either by King Henry VIII or by his son Edward VI, in the sixteenth century. They were all in existence today, in the highest efficiency and prosperity. The preaching of the Spital Sermon had always been a great feature of Easter in the city. The sermon dated to "time out of mind." It was certainly preached as far back as five centuries ago. It was originally preached in the open air—first at the Spital Cross and afterward in St. Paul's churchyard. There have been occasions when attendance at the Spital Sermon must have been rather an ordeal, for they were told that in 1671 the preacher spoke for three hours, and his sermon, when printed, occupied 230 octavo pages of 27,000 words. The Bishop of Chichester, replying, said that when Queen Elizabeth was present on one occasion at the Spital Sermon she was accompanied by two bears, and after the service attended an exhibition of bear-baiting.

The Intuitive Capacity of Children to Understand Spoken Language

In the *British Journal of Psychology*, Dr. J. W. Tomb, chief medical officer of the Asansol mines' board of health, discusses a subject of great interest. Why is it, he asks, that, whereas British parents in India are usually only just able—or sometimes unable—to acquire a conversational knowledge of an Indian language, their children can often understand two or three Indian vernaculars simultaneously? The capacity of children to understand spoken language, Dr. Tomb concludes, is intuitive and is not a function of intelligence; it is a function of the subconscious mind. Whereas the adult finds the greatest difficulty in learning a new language by the exercise of his reasoning and memorizing faculties, the young child picks it up intuitively. It is commonly assumed that children learn a language as adults do, by the conscious memorizing of parts of speech, moods and tenses, but this cannot be so in the ordinary case of infants learning their mother tongue, the parts of speech, moods and tenses of which cannot be consciously apprehended by them as such, or their use explained to them through the medium of language since they possess none. Moreover, children are universally able to converse freely in their mother tongue without any appreciation of its grammatical construction, which in civilized countries they afterward learn by tedious years of study at school. Infants, therefore, must possess the capacity of intuitively bestowing the correct meanings on the sounds (i. e., words) used in their hearing. In the district in Bengal in which Dr. Tomb resides, he frequently sees English babies of from 9 to 18 months receiving directions and instructions from their mothers in English, from their ayahs in Bengali, and from the house servants in Hindustani, obviously understanding what is being said to them in all these languages long before they themselves are able to speak. Infants appear to comprehend languages in whole sentences, which they endeavor to reproduce in extenso; but, owing to the undeveloped condition of their cerebral cortex and particularly of the speech center, they are unable to do so, merely as a rule producing some simple and easily articulated word belonging to the whole. It is also a common experience of Dr. Tomb to hear English children of 3 or 4 years who have been born in the country conversing freely at different times with their parents in English, with their ayahs in Bengali, with the garden coolies in Santali, and with the house servants in Hindustani, while their parents have learned with much laborious effort just sufficient Hindustani to comprehend what the house servants are saying (provided they do not speak too quickly) and to issue simple orders to them. It is even not unusual to see English parents in India unable to understand what their servants are saying to them in Hindustani, and being driven in consequence to bring along an English child of 4 or 5 years, if available, to act as interpreter. Dr. Tomb describes the case of an English girl, aged 4, who had a Tamil-speaking ayah, her permanent ayah, a Bengali, being ill for two months. Within that period and without any apparent effort, the child was able to understand what the ayah was saying to her in Tamil and to converse with her in that language. Moreover, the child continued to speak occasionally in Tamil to the other servants for some time after her Tamil-speaking ayah had gone away, apparently not recognizing that she was speaking to them in a language which they did not understand. Such a case as this can be satisfactorily explained only on the hypothesis that the child "intuitively" and subconsciously placed the correct meanings on the various sounds (words) in Tamil which the ayah used to her in conversation, and was unaware of any difference between the various languages (English, Bengali, Santali, Hindustani, Tamil) that she was able to speak.

Rockefeller Foundation Gift

The Medical School of St. Thomas' Hospital has received a gift of $75,000 from the Rockefeller Foundation toward the building of new laboratories for the education of the students. The laboratories will be situated within the hospital and will be easily accessible from the wards. The medical school has for some time past been considering the question of providing permanent quarters for the students' laboratory, up to now situated in old army huts, and has to this end put by $75,000, but has been unable to begin the building until a further sum of $75,000 could be provided. The generous gift of the Rockefeller Foundation will enable the erection of the laboratories to be begun at once on a site provided by the hospital.

BUDAPEST

(From Our Regular Correspondent)

May 5, 1926.

Deplorable Conditions in the Roumanian Universities

The idea of the numerus clausus, or percentage quota, which caused distress among university students in Hungary, has spread to Roumania. But, whereas in Hungary the quota allows the admission of a few Jewish students, in Roumania Jewish students have been barred and the universities closed for more than a year so that students of all creeds have lost two semesters. Mr. I. Yevin, who came to Roumania to study the situation in the universities, writes in a recent number of a leading weekly paper that the first thing that strikes one about the university building in Bucharest or Jassy is that it is surrounded by soldiers. Each Jewish student was surrounded on entrance and was offered the alternative of being thrashed or of signing a document that he voluntarily withdrew from the university and would not attend any more lectures. Many, faced with this alternative, have signed the declaration.

The professors and lecturers are intimidated. The university officials are at the mercy of the antisemitic student bodies, says Yevin.

When the university senate decided to expel the ringleaders of the disturbances, the minister of education vetoed the decision. When the council of professors intervened on behalf of the Jewish professor Dr. Reiner, who was insulted by his students and compelled to keep away from the university, the minister of education asked for a statement from the students; they supplied a memorandum and the matter was closed.

The new examination system introduced by the department of education has proved an effective bar to the majority of Jewish students.

Distribution of Prizes in the Medical Society

The Budapest Royal Medical Society held its general meeting some days ago. In his opening address the president, Dr. Koloman Buday, announced that the society must depart from its custom of distributing monetary prizes among those who had recently contributed valuable scientific works to Hungarian medical literature. This time the society is in a position to give only diplomas of merit because of depreciation of the currency. The Balassa and Meszarosf funds before the war amounted to $6,000. The interest on this amount was then $500. Now the interest is worth only a cent and a half. "We entertain the hope," concluded the president, "that the winners of this year's competition will not regard the diplomas of merit handed to them as mere sheets of paper but that they will value this distinction, which joins their names to those of their glorious predecessors who earned the admiration of the Hungarian medical profession, and the entire world. Diplomas of merit have been awarded to Professor Michael Lenhossék for his textbook, "The Anatomy of Man"; Tivadar Bársony and Béla Hortobágyi, for their work on the duodenal pyloric reflex; Andor Bosányi, for researches on the pathogenesis of rachitis; László Csáky and Béla Molnar, for work on the thesis that hyperacidity is a disturbance of salt metabolism; Francis Kiss, for his research on the histology of the blood vessels; Joseph Duzár, for investigation of the hormone treatment of chorea minor; Louis Bakay, for his work on the replacement of the esophagus; George Gortvay, for his views on the social hygienic protection of workmen; Hugo Preisz, for investigations on bacteriophagy. The board of the society has elected as corresponding members Profs. John Howland, Baltimore; Ernest Graham Little, London; Leonard Findlay, Glasgow; F. Biedel, Prague; Jose Brito y Foresti, Montevideo; I. van Holve, Leyden; C. Neuberg, Berlin

BERLIN

(From Our Regular Correspondent)

April 24, 1926.

The Congress of Internal Medicine

This letter continues my report on the annual session of the Deutsche Gesellschaft für innere Medizin held in Wiesbaden, April 12-15 (The Journal, May 29, p. 1710).

THE BLOOD AS CLINICAL REFLECTOR OF SOMATIC PROCESSES

Prof. V. Schilling of Berlin, in his paper on "The Blood as the Clinical Reflector of Somatic Processes," made the following statements: The morphologic study of blood processes has been practically completed. However, the most recent conception, the reticulo-endothelial monocyte system, needs to be inquired into further. The division of the blood processes and of blood diseases as clinically separable processes within the scope of these systems has been found tenable: systemic reactions and systemic affections are characteristic of the changes in blood pathology. Differentiation of the systems must, however, be studied not only from the morphologic but also from the functional standpoint. The characteristic shapes of the cells are an indication of their peculiar capacities and functions. Even minute departures from the normal in blood make possible deductions as to the histologic changes in the hematopoietic organs. For that purpose a large number of critical observations on histologic material are already available whereby the connections between the peripheral blood picture and the changes in the extensive hematopoietic regions of the body have been adequately explained. Not only researches on the minute details of internal cell structure, so-called "intracellular pathology," but also the study of humoral colloid changes point out new ways for the elucidation of the functional significance of those changes. The processes which control the leukocyte apparatus may be regarded as parallels of the "inflammation processes." They comprise nervous and vascular, colloidochemical and chemical, hormonal and endocrine changes or disorders. The pathologic process is an accentuation of normal controls and a modification that meets the new demands of the pathologic environment. The clinical scope of these blood processes comprises, medically, latent disturbances that have not yet manifested themselves as "disease"; regular associated conditions of very many and manifold disease processes—especially those of an infectious and toxic nature, and on down to the cardinal aspects of the "blood diseases." The best form of research has been the study of the microscopic blood preparation, extended in special cases, when the need was felt, by the actual cell counts, a few special color tests, certain auxiliary methods, such as the sedimentation test, the determination of resistance, colorimetry, and physical and chemical supplementary tests. In the large majority of cases, however, the skilled investigator can recognize from the single, carefully scrutinized blood preparation not only the cytologic modifications of the peripheral blood picture but also the signs of the inner histologic changes and the modified functions of the organism, and thus gain an insight into the momentary status of the vital processes in the deeper tissues. Repeated observation will reveal to him the course of reactions, which take place according to definite "laws" though they may not always be understood. Blood examination is coming to be a continuous study of cellular pathology on the living organism. The skilled clinician should get from these observations, which he must associate with the general condition of the patient, an idea concerning the nature and the course of the disease process. That this is possible, in the main, through the application of simple principles, although much is yet to be learned, is shown by the practical results of internal medicine, surgery, gynecology, pediatrics and tropical pathology, and many

investigations, conducted with great care, in such specialties as tuberculosis, the hygiene of sport activities, inoculation malaria and recurrent fever, and the control of various forms of treatment.

During the discussion, Stettner of Erlangen observed in a child shifting of the blood picture to the right and relative lymphocytosis, which permit a differentiation according to age. Arneth of Münster regards shifting of the blood picture to the right as equally important with shifting to the left. He demands the observation of the nuclei and protoplasm and a uniform acceptance of his system by investigators. The reaction phases of Schilling he regards as reaction types. Curschmann of Rostock reported on the resistance of hemoglobin to sodium hydroxide. In pernicious anemia, an increased resistance is noted.

GENEVA

(From Our Regular Correspondent)

May 15, 1926.

Death Following Rapid Absorption of Fluid of Edema

A case of sudden death from rapid absorption of the fluid of edema occurred recently at the medical clinic of the University of Geneva (service of Prof. Roch). A man, aged 68, a cardiorenal subject, had been energetically treated with diuretics for some time, but without avail. Then suddenly, without any apparent cause, a formidable diuresis ensued following a dose of theophylline sodio-acetate, which up to that time had been ineffective. Sudden death followed. The pathogenesis of the process is not clear. Dr. Illitch, who studied this case, after summarizing the various theories, takes up the theory of anaphylactic shock. According to this theory the disturbances are due not merely to a sudden excessive loss of fluid, but above all to a colloidoclastic shock resulting from the passage of the serum in the tissues into the circulation. The albumins contained in the fluid of edema have, in respect of the albumins of the blood serum, the same action as heterogenous albumins foreign to the blood. This theory explains why the accidents never ensue when the serous fluid is eliminated, even in large amounts, by puncture or blistering. It also explains why disturbances develop before the onset of diuresis from mere mobilization of the fluids of the edema. The analogy between the clinical accidents of absorption and those of anaphylactic disturbances is remarkable, to such a degree that following mobilization of the fluids of edema the fundamental signs of anaphylactic shock are encountered, viz.: a fall of the blood pressure, transitory massive albuminuria and leukopenia.

Blood Calcium

Calcium in the blood has recently been the object of research work by Dr. E. Wyss at the surgical clinic of the University of Geneva. Being in perfect health, Wyss experimented on himself. For two days he took 6 Gm. of calcium phosphate, and then 8 Gm. daily for five days, a total of 52 Gm. in one week. On the eighth day the blood contained calcium as follows:

8 a. m. (fasting)	0.146 per cent
10:15 a. m.	0.142 per cent
2:30 p. m. (after lunch)	0.140 per cent
6:15 p. m.	0.146 per cent

Wyss found that the calcium content of the blood when the salt was not ingested varied between 0.168 and 0.106 per cent. When the salt was ingested, the calcium content of the blood averaged 0.142 per cent.

Wyss next experimented with calcium in fractures. In five cases he was able to increase the calcium content of the blood, although in one instance, in spite of continued ingestion, the blood content dropped to normal. He concludes also that sex influences the calcium content of the blood; in men it varies from 0.12 to 0.165 per cent; in women, from 0.11 to 0.126 per cent. Age has no influence. Puberty in the female decreases the content. The content is physiologically variable from one hour to another, and is low during digestion. Trauma does not decrease the calcium content during the process of cicatrization. Ordinary fractures or pseudarthroses have no effect on the calcium content. Calcium treatment stabilizes the content in healthy subjects and may increase it for a time, but does not prevent reestablishment of the normal even when treatment with the salt is continued.

Dr. Hugo Oltramare of Geneva showed that sudden change of diet involving a marked decrease of the calcium intake reduces the calcium content of the blood, but this is only temporary. Treatment with lime-water, when the calcium blood content is normal, produces a temporary increase at the beginning of treatment. The calcium content of food in a normal diet seems to be always sufficient. Therefore a low blood calcium content must be explained by either disturbed assimilation or a disturbed metabolism. The ingestion of fresh thyroid gland appears to throw a large quantity of lime into the circulation.

Sex Education

In an address on "Sexual Education During the Years of School Life," Dr. J. Golay of the Faculty of Geneva said that sexual education had become a necessity. If numerous attempts so far undertaken had been fruitless, it is because the necessity of this teaching has not penetrated the public mind, and also because too much moralizing has been done. Golay suggests that teaching should dwell on birth, sex and venereal disease. A child should be frankly told that his mother carried him within herself, and this knowledge will develop filial respect and will show reproduction as a sacred function. The child should be taught the reproduction in plants and then in animals, thus progressively ascending the series. Thus the child will grasp the great laws of fecundation and will know that the majority of living organisms can be reproduced only by a conjugation of the male with the female element. Young people should know about puberty. Boys should be taught to avoid those excesses which injure both morals and the body. Girls are to be warned against seductions, and they should be given a clear understanding of their future duties by developing in them their maternal instinct. The adolescent should know that if he gives way to sexual perversions and onanism he will have the greatest difficulty in giving up the habit. If, in spite of the teaching, parents detect something abnormal in the child, they must speak seriously without frightening the child.

Many physicians and educators recommend diverting the sexual instinct by occupations requiring an expenditure of physical strength, such as sports and life in the open. Dr. Golay thinks it is an error to suppose that physical exercise kills the instinct. Intense intellectual work is, perhaps, the best substitute, but since the laws of hygiene prohibit this in young people, the child must be taught to use his will power. Between 16 and 18 years of age is the time to instruct young people in the pathology of venereal disease. The public should be made to understand that these diseases are not shameful per se. Therefore children will understand that they can confide in their parents, with the result that proper treatment will be undertaken while the disease is still curable.

In public lectures on venereal diseases it is usual to dwell lengthily on their disastrous consequences, probably for the purpose of fright; but morality obtained by fright is no longer morality. For that matter, the phobia of the sexual act does not lead, as might be supposed, to chastity but to perversions. The object of sexual education is to develop morality by a healthy and normal comprehension of natural phenomena and make our sons conscious of their duties and responsibilities.

Marriages

JOHN BERNARD THOMPSON to Mrs. Florence Foley, both of Wittenberg, Wis., March 22.

ANDREW CHRISTIANSEN, St. Paul, to Miss Olive Hamburg of Minneapolis, in April.

DANIEL N. WILLIAMS to Miss Frances Blair, both of Chattanooga, Tenn., recently.

Deaths

Jesse Leland Boogher ✠ St. Louis; Washington University Medical School, St. Louis, 1892; formerly professor of genito-urinary surgery, Barnes Medical College; member of the American Urological Association; secretary of the Section on Diseases of Children, of the American Medical Association, 1898-1899; aged 58; died, April 17, at the Missouri Baptist Sanitarium, following an appendectomy.

Henry Beates, Jr. ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1879; for many years president of the state board of medical examiners and formerly president of the Federation of State Medical Examining and Licensing Boards; member of the Philadelphia Pathological Society; aged 68; died, May 25.

Gordon Bryan Crowell, Lincolnton, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1922; member of the Medical Society of the State of North Carolina; served during the World War; on the staff of the Lincolnton Hospital, where he died, May 9, of influenza and peritonitis, aged 30.

Thomas W. Rogers, New London, Conn.; Medical Department of Columbia College, New York, 1890; member of the Connecticut State Medical Society; formerly on the staff of St. Luke's Hospital, New York; aged 72; died, May 19, of cerebral hemorrhage and arteriosclerosis.

Carlos A. Fish, Frankfort, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1901; member of the Kentucky State Medical Association; aged 51; died, in May, at a sanatorium in Battle Creek, Mich., of heart disease following influenza.

Albert Leonard Bennett, Denver; University of Colorado School of Medicine, Denver, 1897; for many years on the staff of the Mercy Hospital; formerly a medical missionary in China and Africa; aged 62; died, May 5, at Chicago, of pneumonia.

Frank M. Virtue ✠ Sulphur Springs, Ohio; Western Reserve University School of Medicine, Cleveland, 1887; president of the Crawford County Medical Society; member of the school board; aged 62; died, in May, of heart disease.

Peter MacNaughton, Brockville, Ont.; Trinity Medical College, Toronto, 1888; member of the American Psychiatric Association; medical superintendent of the Ontario Hospital for the Insane; aged 67; died, March 7, of pneumonia.

Ten Eyck Olmstead Burleson, Bath, N. Y.; University of Buffalo Department of Medicine, 1880; for ten years connected with the New York Soldiers' and Sailors' Home; aged 72; died, May 13, of cerebral hemorrhage.

Franklin Campbell Jillson ✠ Boston; Medical School of Harvard University, Boston, 1886; served during the World War; aged 62; on the staff of the Faulkner Hospital, where he died, May 7, following a long illness.

Hiram E. Connor, Brookhaven, Miss.; Harvey Medical College, Chicago, 1900; formerly lecturer on genito-urinary diseases, at Flint Medical College of New Orleans University; aged 48; died, February 23, of pneumonia.

James L. Fuller, Warrensburg, N. Y.; Dartmouth Medical School, Hanover, N. H., 1882; formerly member of the state legislature; president of the North Creek National Bank, aged 70; died, May 15, of thrombosis.

Hugh D. Hamilton ✠ Kansas City, Mo.; Missouri Medical College, St. Louis, 1898; served during the World War; on the staff of St. Joseph's Hospital, where he died, May 14; aged 53, of carcinoma of the kidney.

Edward L. Welbourn, Union City, Ind.; Eclectic Medical College of Pennsylvania, Philadelphia, 1866; for many years secretary of the board of health; aged 83; died, May 6, at Los Angeles, following a long illness.

Ralph Steiner ✠ Austin, Texas.; University of Maryland School of Medicine, Baltimore, 1883; formerly state health officer, and president of the state board of health; aged 67; died, May 2, of pernicious anemia.

Caleb J. McNulty, Washington, Pa.; Western Reserve University School of Medicine, Cleveland, 1869; Civil War veteran; formerly a druggist; aged 85; died, April 29, of pneumonia following influenza.

Russell Franklin Benson, Jr. ✠ Troy, N. Y.; Medical Department of Columbia College, New York, 1876; New York Homeopathic Medical College, New York, 1877; aged 74; died, March 28, of pneumonia.

William C. Looney, Normandy, Tenn.; University of the South Medical Department, Sewanee, 1900; mayor of Normandy; aged 69; died, April 7, at a hospital in Shelbyville, following a long illness.

Ripley C. Hoffman ✠ Deming, N. M.; Jefferson Medical College of Philadelphia, 1883; past president of the Luna County Medical Society; formerly mayor; aged 66; died, May 7, of heart disease.

Harry George Macdonald ✠ Hackensack, N. J.; College of Physicians and Surgeons, Baltimore, 1903; served during the World War; on the staff of the Hackensack Hospital; aged 46; died, May 19.

William Edward Sharp, Pascagoula, Miss.; Mississippi Medical College, Meriden, 1909; member of the Mississippi State Medical Association; aged 52; died, March 16, of general paralysis.

Grandison C. Edwards, Hookerton, N. C.; Bellevue Hospital Medical College, New York, 1883; member of the Medical Society of the State of North Carolina; aged 68; died, May 8.

Austin John Blanchard, Jamaica, N. Y.; Long Island College Hospital, Brooklyn, 1892; formerly on the staff of St. Mary's Hospital, New York; aged 69; died, May 9, of cerebral hemorrhage.

John Howard Vorhes ✠ Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1912; served during the World War; aged 38; died, in April, of tuberculous meningitis.

George M. Combest, Lamar, Okla.; College of Physicians and Surgeons, Dallas, Texas, 1905; served during the World War; aged 59; died, February 10, of carcinoma of the stomach.

William David Morrison Bell, Ottawa, Ont., Canada; University of Bishop College Faculty of Medicine, Montreal, Que., 1882; aged 67; died, March 14, of cerebral hemorrhage.

Maro Johnson Love, Bloomingville, Ohio; Long Island College Hospital, Brooklyn, 1871; formerly member of the state legislature; aged 78; died, April 12, of valvular heart disease.

Frank H. Kimball, Rockford, Ill.; Chicago Medical College, 1880; aged 70; formerly on the staff of the Rockford City Hospital; where he died, May 8, following a long illness.

Henry Gwynn Branham, Baltimore; Maryland Medical College, Baltimore, 1905; aged 42; was drowned, in May, when he fell into a shallow spring at Okahumpka, Fla.

Julius Rudisch, New York; University of Heidelberg, Germany, 1874; for many years on the staff of Mount Sinai Hospital; aged 78; died recently, at Doylestown, Pa.

W. J. Barker, Trenton, Tenn.; Memphis Hospital Medical College, 1901; member of the Tennessee State Medical Association; aged 50; died recently, of pneumonia.

Isaac A. Bigger ✠ Rock Hill, S. C.; Medical College of the State of South Carolina, Charleston, 1889; aged 58; died, May 6, at Cedar Crest, following a long illness.

Edward Jerome Ziegler, Oxford, Wis.; Milwaukee Medical College, 1911; member of the State Medical Society of Wisconsin; aged 42; died, April 23, of appendicitis.

James H. J. Flynn ✠ New Haven, Conn.; Yale University School of Medicine, New Haven, 1895; aged 52; died, April 26, of angina pectoris and coronary embolism.

John Baker Morris, Lewiston, Idaho; St. Louis Medical College, 1874; for ten years mayor of Lewiston; aged 75; died, March 26, of carcinoma of the liver.

George B. Hennigh, Perkasie, Pa.; Baltimore Medical College, 1891; formerly postmaster of Sykesville; aged 63; died, April 6, of carcinoma of the liver.

Mary Augusta Brown Girard, San Francisco; Northwestern University Woman's Medical School, Chicago, 1883; aged 90; died, May 15, of chronic myocarditis.

Mont H. Cassidy, Milan, Mich.; Michigan College of Medicine and Surgery, 1892; aged 70; died, April 30, at Monclova, Ohio, of cerebral hemorrhage.

James J. Coppedge, Lone Oak, Texas; University of Louisville School of Medicine, 1887; formerly a minister; aged 78; died, April 29, of pancreatitis.

Abraham S. Gish, Abilene, Kan.; Eclectic Medical College of Pennsylvania, Philadelphia, 1869; aged 82; died, April 25, of cerebral hemorrhage.

Albin Wilshire Lipscomb, New Market, Ala.; Vanderbilt University Medical Department, Nashville, 1896; died, April 28, of pneumonia.

Allen Corson Cowperthwaite, Los Angeles; Hahnemann Medical College of Philadelphia, 1869; aged 77; died, March 1, of chronic myocarditis.

Frederick Lucian Brigham, Wolcott, Vt.; Dartmouth Medical School, Hanover, N. H., 1887; aged 64; died recently, of cerebral embolism.

Joseph Trimble Ricker, Loveland, Ohio; Eclectic Medical College of the City of New York, 1871; aged 77; died, May 4, at Epworth Heights.

William C. Baker ✠ Hummelstown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1874; aged 76; died in April.

Charles Campbell Moffett, Elyria, Ohio; Western Reserve University School of Medicine, Cleveland, 1890; aged 58; died, March 17.

William Henry Bourns, Frankville, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1892; aged 64; died, March 11.

Charles H. Siegrist ✠ Uhrichsville, Ohio; Ohio Medical University, Columbus, 1896; formerly a druggist; aged 58; died, April 30.

Frank C. Combes ✠ New York; Bellevue Hospital Medical College, New York, 1883; aged 63; died, April 18, of cerebral hemorrhage.

William I. Swangem, Terrell, Texas; University of Louisville (Ky.) School of Medicine, 1890; aged 69; died, March 4, of paralysis.

Charles Sumner Fischer, New York; Long Island College Hospital, Brooklyn, 1887; aged 60; died, May 13, of pneumonia.

William H. Hinkle, Degraff, Ohio; Medical College of Ohio, Cincinnati, 1886; aged 77; died, April 9, of general paralysis.

Edward Felix Hixon, Vancouver, Wash.; Victoria University Medical Department, Toronto, 1884; aged 70; died, April 26.

Hugh Kennedy Hyndman, Exeter, Ont., Canada; Western University Medical School, London, 1886; aged 62; died, March 6.

Laurent S. Mitchell, New York; New York Homeopathic Medical College and Hospital, 1895; died, May 10, of heart disease.

Charles Aronson, Los Angeles; Tufts College Medical School, Boston, 1916; aged 30; died, April 6, of brain tumor.

Samuel E. Hassell, Lancaster, Wis.; Hahnemann Medical College and Hospital, Chicago, 1872; aged 78; died, April 25.

Charles William Bonar, West Liberty, W. Va.; (licensed, West Virginia, 1881); aged 77; died, March 3, of senility.

John Andrew Taulbee, Mounds, Okla.; Kentucky School of Medicine, Louisville, 1889; aged 77; died in March.

George Sherman Haswell, Watervliet, N. Y.; Albany Medical College, 1892; aged 57; died, April 28.

John L. Goff, Litchfield, Neb. (licensed, Nebraska, 1891); aged 80; died, March 16, of lobar pneumonia.

Frank Scott, Rogers, Ohio; Cleveland Medical College, 1877; aged 81; died, May 18, of pneumonia.

Edward O. Smith ✠ Winfield, Kan.; Keokuk (Iowa) Medical College, 1895; aged 57; died in April.

George W. Callis, Dyer, Tenn.; Memphis Hospital Medical College, 1885; aged 78; died, February 23.

Milton W. Sparks, Terre Haute, Ind.; Louisville National Medical College, 1896; died, March 31.

CORRECTION

Frank M. Baldwin.—The late Dr. Frank M. Baldwin, whose obituary was published in THE JOURNAL, May 22, resided at Blanchester, Ohio, instead of Columbus.

Correspondence

POSTMORTEM RECORDS OF HOSPITALS

To the Editor:—We have read with a great deal of interest the article by Christian (THE JOURNAL, May 15) entitled "Selecting a Hospital for Internship."

At the outset, we wish to subscribe heartily to the statements as to the importance of necropsies and their value as a teaching medium, both for the staff and for the interns. The Newark Beth Israel Hospital, with an active 125 bed general service, of which about 60 per cent are ward beds, is supported by the Jewish Community but is nonsectarian in its policies, treating about 45 per cent of non-Jewish patients. During the year 1925 there were 182 deaths in the hospital, in thirty-eight of which, or 20.9 per cent of all deaths (both private and ward), necropsies were held.

Realizing the importance of necropsies and desirous of getting a greater percentage of our deaths to the postmortem room, we undertook a vigorous campaign among the physicians sending patients to the hospital, and among the lay public of our community, in an endeavor to do away with the prevalent, traditional prejudice against the performance of necropsies. In addition, Jan. 1, 1926, we established a routine to make sure that the relatives of all persons dying in the hospital would be interviewed for the purpose of obtaining permission for a necropsy. A form must be filled out in every death, either granting or refusing this. In difficult cases, the pathologist or the attending physician, or both, is called in in an effort to convince the relatives of the importance of this final examination.

Since adopting this plan, we have had to date seventy-three deaths, of which thirty-seven have come to necropsy. Of these deaths thirty-four are Jewish with seventeen necropsies, and thirty-nine are non-Jewish with twenty necropsies. These figures show that whatever religious scruples might exist against necropsies, they are not very strong and that careful and sympathetic arguments can overcome them.

PAUL KELLER, M.D., Superintendent,
MAX DANZIS, M.D., Chief of Staff,
ASHER YAGUDA, M.D., Pathologist,
Beth Israel Hospital,
Newark, N. J.

THE OMENTUM

To the Editor:—I note with interest your current comment on the omentum (THE JOURNAL, April 24). I wish to suggest that it never has been proved that peristalsis or change in position of the body will cause the omentum to move. In fact, it has been proved that it does not. When an area becomes inflamed, the omentum becomes hyperemic followed by exudation and leukocytic extravasation. Then and not until then does the omentum move. When the omentum begins to move, peristalsis has already ceased because of the inflammatory reaction within the gut walls. (Compare "Causes of the Migration of the Omentum," THE JOURNAL, April 26, 1913, p. 1292).

ARTHUR E. HERTZLER, M.D., Halstead, Kan.

CONTROL OF NARCOTICS

To the Editor:—Following suggestions in THE JOURNAL of recent date, we have sent a letter to President Coolidge, the Committee on Ways and Means, the Committee on Finance of the U. S. Senate, the Secretary of the Treasury, Hon. William Williamson, Hon. W. H. McMaster, and Hon. Peter Norbeck protesting against S. 4085, which was introduced in Congress, April 24, at the instance of the Treasury Department. We have had a reply from our congressman, William

Williamson, and from one of our senators, Peter Norbeck, in which they say that S. 4085 has not been called to their attention by protest before ours. They both assure us that they will look into the proposed questionable legislation. I am wondering whether you should not put forth further effort to stir physicians up in this matter.

C. F. MORSMAN, M.D., Hot Springs, S. D.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SHELL SHOCK

To the Editor:—Kindly give me the prevailing opinion as to the definition of "shell shock." Is shell shock ever caused in a perfectly normal person, one who has seen something of life, one who has been tried, one with a perfectly good family history? Is it, or is it not, a sign of "weak brother"—an unstable character? Do we, or do we not, see a similar condition in soldiers who were not under fire?

WEST VIRGINIA INQUIRER.

ANSWER.—Histologic study of the nervous systems of men who had died after being subjected to the explosion of a shell without signs of external bodily injury revealed certain changes that were attributed to concussion. From this observation it was concluded that many of the heterogeneous symptoms of nervous disorder observed in nonfatal cases might be due to changes of the same character, and they were consequently called shell shock. The occurrence of exactly similar symptom complexes, however, without exposure to shell explosions even among men in camp in America who had never seen a shell fired, the fact that "shell shock" was not observed among men captured as prisoners even though many of them had been blown up by shells and more or less seriously injured, and the results that were obtained from clinical study and psychotherapy in men classed as "shell shock" demonstrated conclusively that this term was a misnomer and the title was officially discontinued soon after the United States entered the war by the Surgeon General of the army. Instead, these cases were classified as neuroses or psychoneuroses entirely comparable to the similar conditions arising in civilian life, and the essentially mental nature of the disorders was recognized. Probably the best description of the nature of these disabilities is that which characterizes them as a means of escape from an intolerable situation.

The conception of "a perfectly normal person" is quite untenable. Normality of a person, that is to say of the man as a whole, can mean nothing else than successful adaptation to the surroundings in which he is placed. Man must struggle for the satisfaction of his instinctive longings and needs with the circumstances of whatever may happen to be his social environment from time to time. No one method of securing satisfaction can be said to be "normal," though some methods will be more satisfactory than others. Probably the best answer to the question can be given by pointing out that men broke down with psychoneuroses (or "shell shock") at every stage of the army career from enrolment to rehabilitation in civil life. In spite of the successive eliminations of persons unable to make the grade of the "intolerable situations" encountered during the successive steps, large numbers of psychoneuroses developed even among men in the firing line, men who, on the whole, may be regarded as a group of the healthiest and "most normal" of the young manhood of the nation. It is true that studies of family histories revealed a greater proportion of "nervous taint" among those who broke down than among those who did not, but it must also be remembered that there are few families in which such taints cannot be found if sought. It also seems justifiable to conclude that persons who are least well equipped by inheritance and training for facing difficulties will break down under the smallest stress, but what weight should be given to breeding and how much to training is not known; the fact that more than 90 per cent of the men at the front who developed psychoneuroses were able to return to duty within three months under treatment by measures that were essentially training or educational in nature must be considered highly significant.

There is no essential difference between the psychoneuroses developing in the army and those that arise in civil life. The circumstances surrounding the man at the time are different and the nature of the "intolerable situations" is different, so that the actual symptomatology is likely to vary. It may be pointed out here that the psychoneuroses among ex-service men today have arisen not on the basis of war difficulties but rather on those inherent to readjustment to civilian life, even though, as would be expected, the army experience is used in the construction of the particular symptoms presented.

Recognition of the nature of these disorders came largely from experience during the World War. It is impossible, therefore, to compare statistically the frequency in that with those in the Civil War. But that similar psychoneuroses were common in the latter is well known and, in illustration, attention may be called to the reports of Da Costa on functional heart troubles in Civil War soldiers.

INFANTILE TETANY

To the Editor:—I should like to know the symptoms of infantile tetany and treatment of a case in a boy, aged 18 months. Please omit name.

M.D., Pennsylvania.

ANSWER.—Tetany is frequently associated with rickets. The condition occurs most frequently toward the close of winter and in the early spring months. Carpopedal spasm is one of the early symptoms. This is a tonic spasm that involves the hands or feet. The hands assume the so-called obstetric position, with the fingers and thumb approximated and with contracture at the wrist. The arms are often held against the chest. The lower extremities are not always involved, but if they are there is flexion at the knee joint and the feet are held in the position of equinovarus. Occasionally edema of the dorsal surfaces of the hands and feet occurs.

Generalized convulsions are of common occurrence and may be observed in the latent type of the disease as well as in the manifest. The spasm generally starts in the muscles of the eye and face and then rapidly extends to the extremities. Relaxation occurs soon after the convulsion, and consciousness returns almost immediately. In this way the convulsions of tetany differ from epileptic seizures.

Laryngospasm is a characteristic symptom and may occur early in the affection. It consists of a peculiar crowing inspiratory sound. Laryngospasm may be followed by convulsions.

In addition to these symptoms there are several characteristic signs. These may be observed in the latent type of the disease. The Trousseau phenomenon is elicited when the arm above the elbow is constricted. When this occurs, the child's hand will assume the contracted tetany position. The Chvostek sign is elicited by tapping the cheek over the superficial course of the facial nerve. If tetany is present, lightning-like contractions occur over all parts of the face controlled by the facial nerve. The Erb phenomenon represents a hyperexcitability of peripheral nerves, as determined by the use of the galvanic current.

It has been definitely shown that the calcium content of the blood is materially reduced in cases of tetany. In contradistinction to this, the phosphorus is almost always reduced in rickets.

Children suffering from active tetany should be given 1 Gm. of calcium chloride by mouth every four hours for the first two days. If the symptoms subside, 0.65 Gm. of the drug should be given four times a day for three or four days, and then from 0.3 to 0.65 Gm. three times a day for two weeks. If convulsions occur, chloral hydrate and calcium bromide should be used in appropriate doses. Ultraviolet irradiation seems to cause an increase of the serum calcium and is undoubtedly of value in these cases. Four cubic centimeters of cod liver oil two or three times daily should also be given, particularly in view of the fact that rickets and tetany are usually coexistent.

ENDOTHELIAL SYSTEM—DOROTHY REED CELL

To the Editor:—Kindly define the following terms: (1) reticulo-endothelial system of the skin; (2) the Dorothy Reed cell in Hodgkin's disease. Kindly omit name.

M.D., Connecticut.

ANSWER.—1. The reticulo-endothelial system, as described by Aschoff and Landau (1913), includes ordinary endothelial cells, fibrocytes, reticular cells of the spleen and lymphoid tissues, the reticulo-endothelium of the spleen, lymph and marrow sinuses, of the lung, suprarenal and hypophysial capillaries, the Kupffer cells of the liver, the histiocytes or

clasmatocytes and the splenocytes and blood monocytes, named in the order of increasing phagocytic properties by which they are generally recognized. In the corium and subcutaneous connective tissue there would be the endothelium of the capillaries and lymph spaces, reticular cells, fibroblasts and the highly phagocytic clasmatocytes, which were described by Ranvier as long, branching cells with oval nuclei and finely granular cytoplasm and are evidently the same as some at least of the macrophages of Metchnikoff. These different cells, all of mesodermal origin, are not highly differentiated, and under proper stimulus any one seems to be able to produce any of the other forms. The extent of this system, the number of cells that may become actively phagocytic in the whole cutaneous organ, is incalculable. Pursuant on their phagocytic function there is evidence also that these cells produce such substances as bilirubin from hemoglobin and antibodies. Textbooks on diseases of the skin have practically no reference to this system, so the more general studies must be consulted.

2. In recent writing the term "Dorothy Reed cell" appears only occasionally. Therefore, the general medical reader will find difficulty in identifying the cell among the several unusual types characteristic of the disease. MacCallum, in "A Text Book of Pathology," third edition, page 859, although he does not use the name Dorothy Reed cell, describes it as follows: "Among these cells there are found much larger ones which constitute the most characteristic feature of the lesion. These are really quite large cells, and while they vary greatly, are many times the size of the lymphocytes. Their protoplasm is clear except for scattered, irregular stainable shreds, and their outline is rather ragged. They contain one or two or several large nuclei, which are rounded or indented or lobed and usually lie close together. These nuclei are very sharply outlined with a deeply staining chromatin membrane, within which the nuclear substance is relatively sparsely granular. In each nucleus there is a large nucleolus, sometimes two, and these nucleoli stand out very clearly with a deep stain." Dr. Reed's description of the lesions of Hodgkin's disease appeared in *Johns Hopkins Hospital Reports* (**10**:133, 1902), under the title "The Pathological Changes in Hodgkin's Disease."

VISIBILITY OF SIGNS

To the Editor:—I should like information regarding the visibility of different colors for street signs. Which would be the most visible:

White letters on black background
White letters on blue background
Black letters on white background
Black letters on yellow background?

T. W. ASHLEY, M.D., Kenosha, Wis.

ANSWER.—The visibility of different colors for street signs would depend to a great extent on the illumination under which the street signs were to be seen. In general, black letters on a white background would offer sharper contrast than any other combination, particularly in diffuse daylight. But this offers the disadvantage that in the average city where the street signs would be used, there is so much smoke in the atmosphere that the white background soon becomes a dirty gray and the contrast is lost. This holds true to a lesser extent of other backgrounds. White letters on a blue background form a favored combination in many cities, and seem to retain their contrast despite atmospheric dirt fairly well.

EFFECT OF SMOKING ON BREAST MILK

To the Editor:—I have a patient with a 4 weeks old baby. The mother is an inveterate cigaret smoker. The baby has diarrhea from no apparent cause. I have stopped the mother's smoking. I wondered whether nicotine could be excreted through the breast milk. What effect would this have on the baby's bowels?

JOSEPH HALTON, M.D., Sarasota, Fla.

ANSWER.—In nursing mothers who smoke excessively, nicotine may be found in the breast milk. Since diarrhea is one of the symptoms of nicotine poisoning in adults, it might conceivably occur in infants also. Lesage asserts that wetnurses who smoke or chew tobacco can poison the babies they nurse and the symptoms produced are digestive disturbances, restlessness, dyspnea, bradycardia, syncope, collapse and death. However, such a result must be a great rarity; for in the experience of one of the leading pediatricians in the country, no harm has ever been observed in babies nursed by mothers who smoke inordinately. Heavy smokers, as a rule, cannot nurse their babies very long.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 13-16. Sec., Dr. S. W. Welch, Montgomery.
ARIZONA: Phoenix, July 6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.
CALIFORNIA: San Francisco, July 12-15. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.
COLORADO: Denver, July 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
CONNECTICUT: Hartford, Reg. Bd., July 13-14. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Bd., New Haven, July 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.
DELAWARE: Wilmington, Regular Board and Homeo. Board, June 15-17. Pres., Dr. H. W. Briggs, Wilmington.
FLORIDA: St. Petersburg, June 14-15. Sec., Dr. H. M. Rowlett, Box 603, Tampa.
GEORGIA: Atlanta, June 9-11; Augusta, June 1-3. Sec., Dr. C. T. Nolan, Marietta, Ga.
INDIANA: Indianapolis, July 13-15. Sec., Dr. Wm. T. Gott, 421 State House, Indianapolis.
IOWA: Iowa City, June 8-10. Commissioner of Health, Dr. Don M. Griswold, State Capitol, Des Moines.
KANSAS: Kansas City, June 15. Sec., Dr. Albert S. Ross, Sabetha.
KENTUCKY: Louisville, June 24-26. Sec., Dr. A. T. McCormack, 532 West Main Street, Louisville.
MAINE: Augusta, July 6-7. Sec., Dr. Adam P. Leighton, 192 State St., Portland.
MARYLAND: Baltimore, Reg. Bd., June 15-18. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. Homeo. Bd., June 15-16. Sec., Dr. Joseph S. Garrison, Old Orchard Rd., Ten Hills, Baltimore.
MASSACHUSETTS: Boston, July 13-15. Sec., Dr. Frank M. Vaughan, Room 144, State House, Boston.
MICHIGAN: Ann Arbor, June 8-10. Detroit, June 14-16. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.
MINNESOTA: Minneapolis, June 15. Sec., Dr. A. E. Comstock, 734 Lowry Bldg., St. Paul.
MISSISSIPPI: Jackson, June 24-25. Sec., Dr. F. J. Underwood, Jackson.
MISSOURI: St. Louis, June 28-July 1. Chief, Licensure, Dr. Ross Hopkins, Jefferson City.
NATIONAL BOARD OF MEDICAL EXAMINERS: Part I, June 21-23; Part II, June 22-23. All applications should be made on or before May 15. Sec., Dr. J. S. Rodman, 1600 Walnut Street, Philadelphia.
NEBRASKA: Omaha, June 8-10. Director, Bur. of Exam. Bds., Mrs. Clark Perkins, Lincoln.
NEW JERSEY: Trenton, June 15-16. Sec., Dr. Alexander MacAlister, Room 1101, Trenton Trust Bldg., Trenton.
NEW YORK: Albany, Buffalo, New York and Syracuse, June 28-July 1. Chief, Mr. Herbert J. Hamilton, Education Bldg., Albany.
NORTH CAROLINA: Raleigh, June 21-25. Sec., Dr. K. P. B. Bonner, Morehead City.
NORTH DAKOTA: Grand Forks, July 6. Sec., Dr. G. M. Williamson, Grand Forks.
OHIO: Columbus, June 8-11. Sec., Dr. H. M. Platter, Columbus.
OKLAHOMA: Oklahoma City, June 15-16. Sec., Dr. J. M. Byrum, Shawnee.
OREGON: Portland, July 6-8. Sec., Dr. U. C. Coe, 1208 Stevens Bldg., Portland.
PENNSYLVANIA: Philadelphia and Pittsburgh, July 6-10. Director Prof. Education, C. D. Koch, Harrisburg.
RHODE ISLAND: Providence, July 1-2. Sec., Dr. B. U. Richards, 315 State House, Providence.
SOUTH CAROLINA: Columbia, June 22. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.
SOUTH DAKOTA: Custer, July 20. Director, Med. Lic., Dr. H. R. Kenaston, Bonesteel.
TENNESSEE: Memphis, Nashville and Knoxville, June 11-12. Sec., Dr. Alfred B. De Loach, 434 Madison Ave., Memphis.
TEXAS: Austin, June 15-17. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas.
UTAH: Salt Lake City, July 6. Dir., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.
VERMONT: Burlington, June 23. Sec., Dr. W. Scott Nay, Underhill.
VIRGINIA: Richmond, June 16-19. Sec., Dr. J. M. Preston, 720 Shenandoah Life Bldg., Roanoke.
WASHINGTON: Olympia, July 6. Director, Dept. of Licenses, Mr. Charles R. Maybury, Olympia.
WEST VIRGINIA: Martinsburg, July 6. Sec., Dr. W. T. Henshaw, Charleston.
WISCONSIN: Milwaukee, Basic Science Board, June 12-13. Sec., Dr. M. F. Guyer, Madison. Regular Board, June 29-July 1. Sec., Dr. Robert E. Flynn, State Bank Bldg., La Crosse.
WYOMING: Cheyenne, June 7-9. Sec., Dr. G. M. Anderson, Cheyenne.

Minnesota January Examination

The Minnesota Board of Medical Examiners reports the oral, written and practical examination held in Minneapolis, Jan. 5-7, 1926. The examination covered 15 subjects and included 80 questions. An average of 75 per cent was required to pass. Forty-three candidates were examined, all of whom passed. Six candidates were licensed by reciprocity and 2 by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine		(1925)	89.8
Georgetown University School of Medicine		(1924)	91
George Washington University Medical School		(1924)	90
Northwestern University Medical School		(1925)*	82.3, 89.2, 91.4

Rush Medical College	(1925)* 89.3	(1925)	90.4
University of Minnesota Medical School	(1924) 92, (1925) (1925)† 84.5, 84.8, 85.4, 85.9, 86.1, 86.7, 86.8, 87.6, 87.7, 88, 88.1, 88.3, 88.6, 88.7, 88.7, 89, 89.2, 89.2, 89.3, 89.6, 90, 90, 90.3, 90.9, 92.4, 93		92.8
St. Louis University School of Medicine	(1922) 90,	(1925)	89
Washington University School of Medicine		(1925)	86.4
Columbia Univ. Coll. of P. and S.	(1917) 88.6,	(1918)	91.5
Medical College of the State of South Carolina		(1924)	85.8
McGill University Faculty of Medicine	(1923)		90

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1916)	Illinois
Tufts College Medical School	(1909)	New Hamp.
University of Michigan Medical School	(1924)	Michigan
University of Nebraska College of Medicine	(1925)	Nebraska
University of Pennsylvania School of Medicine	(1924)	N. Carolina
Medical College of Virginia	(1921)	Virginia

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
State University of Iowa College of Medicine	(1916)	N. B. M. Ex.
Harvard University	(1923)	N. B. M. Ex.

* These candidates have finished their medical courses and will receive their M.D. degrees on completion of a year's internship in a hospital.

† These candidates have finished their medical courses and received their M.B. degrees and will receive their M.D. degrees on completion of a year's internship in a hospital.

Ohio Reciprocity Report

Dr. H. M. Platter, secretary of the Ohio State Medical Board, reports that 13 candidates were licensed by reciprocity at the meeting held April 6, 1926. The following colleges were represented:

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Indiana University School of Medicine	(1924)	Indiana
University of Louisville School of Medicine	(1921, 2) (1924)	Kentucky
College of Physicians and Surgeons, Baltimore	(1902)	Maryland
University of Maryland School of Medicine	(1920)	Penna.
Boston University School of Medicine	(1892)	New York
Barnes Medical College, St. Louis	(1897)	W. Virginia
Creighton University College of Medicine	(1923)	Nebraska
Jefferson Medical College of Philadelphia	(1914)	Maine
Medico-Chirurgical College of Philadelphia	(1914)	Penna.
Meharry Medical College	(1923)	Tennessee
University of Toronto Faculty of Medicine	(1924)	Michigan

Book Notices

A MANUAL OF THE PARASITIC PROTOZOA OF MAN. By Charles F. Craig, M.D., M.A., Lieutenant-Colonel, Medical Corps, U. S. Army, D.S.M. Cloth. Price, $7. Pp. 569, with 95 illustrations. Philadelphia: J. B. Lippincott Company, 1926.

Among workers in this country no one is better fitted by training and experience than Dr. Craig to write a useful, comprehensive and comprehensible work on the human parasitic protozoa. The friendly attitude with which one turns to an examination of the book is abundantly confirmed by its contents. The generous volume proves to be a mine of valuable information. One can hardly overemphasize today the importance of protozoan parasites in human medicine. The parasites of malarial fevers, amebic dysentery, trypanosomiasis, kala-azar, and various other even more recently discovered forms are recognized generally as among the most important causes of human disease. Yet it is hardly a generation since the epoch-making discoveries concerning the malarial organism and its transmission were announced, and at that time even the names of other organisms were mentioned rarely, if at all, in works on medicine. The extreme newness of the field makes it all the more difficult for a medical man to handle the material he may find, and if such a worker sought to orient himself in the general field, he would be compelled to depend, in large part at least, on publications in other languages than English. The present work summarizes an immense amount of accurate data concerning the various parasitic protozoa found in man. It introduces also those closely related parasitic forms from lower animals, the similar species of the coprozoic fauna and even the free-living types that have to be taken into account in accurate, differential diagnosis. While the work is definitely designed for the use of teachers, medical practitioners, students and health officials, and while it emphasizes very rightly the clinical significance of the various species and their definite relations to human disease, it is also reasonably well supplied with technical information of the zoological and biologic type. The author gives under each organism data concerning the correct name and the various synonyms, the history of the discovery and study of the organism, its structure, habits, reproduction, life history, distribution, the method of transmission, experimental infection and relation to disease, as well as the pathology, prophylaxis and diagnosis. At the end of each chapter is given in abbreviated form an admirable list of references to the important researches of recent date on the species in question. This list is reasonably complete from the standpoint of the original sources, and will be extremely valuable for all students of the subject. This feature is ordinarily entirely lacking in textbooks, and, even when present, is rarely if ever carried out with the care and completeness shown in this work. Considerable space has also been devoted to the methods of cultivating, staining and studying the various parasitic protozoa. Some of the illustrations are very fine; most of them are good, but a few are really illegible and, like figure 65, are even crude. A valuable feature in the treatment of the subject is the presentation of careful data concerning free-living species that are likely to be confused with parasitic organisms. The history of these early years in the study of parasitic protozoa is full of confusion that has arisen through accidental contamination of the material collected for examination. More than one form has been described like *Vahlkampfia lobospinosa*, which was "believed to be a dysentery ameba, but is a typical free-living species and is now known to have nothing to do with the etiology of dysentery" (p. 124). If Dr. Craig's effort accomplished nothing further than to prevent the recurrence of such confusion as has arisen in this and similar cases, all the time and effort put on the preparation and publication of this work would be amply justified as a contribution to scientific medicine. It is entirely natural to find the individual views of the author cropping out from point to point. Thus, one would find it difficult to secure general approval of the statement that "the production of symptoms by *Endameba histolytica* depends *entirely* on the lack of resistance of the infected individual to the infection" (p. 51). But why discuss such minutiae? In view of the great mass of valuable material which the author has brought together in this work, it will be many years before the subject is handled again by one of equal experience and ability. Indeed, Dr. Craig states that the material has accumulated during an experience of about thirty years in the study of these organisms and of about ten years spent in teaching the subject. On the whole, the treatment has been broad and fair and will commend itself to the careful student of the subject. Dr. Craig is to be congratulated on having produced a valuable work.

RÖNTGENBEHANDLUNG INNERER KRANKHEITEN. Von Prof. Dr. W. Parrisius, Privatdozent an der Med. Univ.-Klinik, Tübingen. Paper. Price, 15 marks. Pp. 227, with 54 illustrations. Leipsic: S. Hirzel, 1926.

The author first discusses the theory of the production of roentgen rays and the essentials of filtration. A section on the physical and biologic methods of measuring the rays leads to a chapter on deep dosage, in which appear the Holfelder patterns, which, placed on the body, locate the various organs and indicate the dosage. The clinical part of the book reviews the literature and presents the experience of the author. He quotes experiments establishing the fact that the hematopoietic organs are highly susceptible to the influence of the roentgen rays. The reaction of the blood and of the spleen is discussed. In chronic myelocytic leukemia, the author is convinced, no true cure can be achieved by radiotherapy. He cautions against it in acute cases, and even in chronic cases the dosage has to be chosen with extreme care. In lymphatic leukemia heavy doses are indicated, and roentgen-ray therapy has to be abandoned if the erythrocytes diminish. In lymphogranuloma there are occasionally favorable results; also in lymphosarcoma. Excisions for diagnostic purposes are not favored. In polycythemia rubra vera the author emphasizes the necessity of applying intense doses to the bones one by one so as to avoid injury to the large glandular organs by a flooding of the entire body with rays. Leukopenia is a danger signal. With these precautions, some of the results are encouraging. In hemolytic icterus there were no convincing results, but irradiation is justifiable to provoke a hemolytic attack for diagnostic purposes. In localized tuberculosis, especially if the foci are on or near the surface, good results may be

expected, though a direct bactericidal action of the rays cannot be established. In pulmonary tuberculosis, the rays accelerate the natural healing process. The stationary or slowly progressing cases and the cirrhotic and nodular forms respond to treatment. Caverns are not a contraindication, but all pneumonic exudative and acutely progressive forms are unsuitable for treatment. Only diminished doses should be employed. Tuberculosis of the larynx is amenable to treatment, provided there is no high fever and no accentuated tuberculosis of the lungs. In cases with deep ulcerations, irradiation is contraindicated. The dosage must be low, as heavy dosage produces edema, hoarseness and grave necrosis. The author does not favor irradiation in tuberculosis of the bones and joints. In bronchitis and bronchial asthma, no convincing results were reported. In cases of simple hypertrophy of the thymus, results have been satisfactory, but in complications ascribed to thymus disturbances, such as psoriasis or osteomalacia, the results are doubtful. The situation with regard to exophthalmic goiter is not clear, but irradiation in simple parenchymatous goiter is considered useless. No appreciable results were obtained on the suprarenals or pancreas. Roentgen-ray therapy in disturbances of the nervous system has produced a host of publications of contradictory character. Irradiation of prostatic hypertrophy may produce temporary results but cannot be brought in successful competition with surgery. Gonorrheal arthritis is the only form that seems to offer a favorable field. Reports on results in gastric ulcer are not encouraging. In glomerulonephritis, irradiation occasionally exerts a pronounced favorable influence on oliguria; but the operator should bear in mind that the skin of a patient with nephritis is very susceptible to roentgen-ray burns. Irradiation of the liver may produce late necrosis. The use of roentgen rays in tonsillar hypertrophy is not recommended. The closing chapter is devoted to a discussion of the general malaise that frequently follows roentgen-ray treatment.

MEDICAL DIAGNOSIS. For the Student and Practitioner. By Charles Lyman Greene, M.D., Chief of Staff, St. Luke's Hospital, St. Paul. Sixth edition. Cloth. Price, $12. Pp. 1468, with 723 illustrations. Philadelphia: P. Blakiston's Son & Co., 1926.

This edition is presented because of the rapid advances in many fields of medicine, both clinical and laboratory. The author begins with a fine plea for honesty and open mindedness in the practice of medicine, showing by many examples the errors and blind spots that may mislead us. Then follow chapters on history taking and external examinations, with pointers on estimating the value of evidence thus obtained. Following this, each system of the body is reviewed, with complete consideration of physical and laboratory findings and the diseases of this system. Thus follow excellent chapters on the basic facts of heart action with work, polygraph and electrocardiagraph, and all the other organs or systems are similarly treated. The volume is large and complete. For both student and medical practitioner it is admirably suited as either a reference work or as a volume for diligent study. Throughout there is much of an individual and personal note, and the reader feels that the author is making every effort to instruct him in such a way that he will not err in his conclusions. One rarely finds in a single volume the wealth of material here contained.

HANDBUCH DER GESAMTEN AUGENHEILKUNDE. Von Th. Axenfeld und A. Elschnig. Lieferung 488-490. I. Teil, I. Band, 2 Abt., Kapital III. Mikroskopische Anatomie der Regenbogenhaut. Von M. Wolfrum. Paper. Price, 16.50 marks. Pp. 218, with 57 illustrations. Berlin: Julius Springer, 1926.

It would scarcely seem possible that one could write more than 200 pages about the microscopic anatomy of that minute bit of colored tissue, the iris, without delving deeply into the physiology and comparative anatomy. Nevertheless, the author has succeeded in producing the most exhaustive purely anatomic description that exists in medical literature. The first fifty pages are devoted to the gross description of the iris, and include the clinical appearance as seen with the slit lamp of Gullstrand. Thirty pages are then given to the microscopic technic and method of collecting material for the microscopic study of the iris. The remainder of the book is a wonderful description of the histologic appearance of the iris, with magnificent illustrations, principally from the author's seemingly endless collection. The developmental phase and the comparative phase of the microscopic anatomy are touched on only when pertinent, and no undue attention is devoted to these. A bibliography of nine pages is appended. This is a book that should be read by every ophthalmologist and should occupy a handy place on his reference shelves. The printing and proof reading is on the same high plane as is the rest of the handbook; the illustrations are excellent, and the paper cover tears off easily.

INDUSTRIAL FERMENTATIONS. By Paul W. Allen, M.S., Ph.D., Professor of Bacteriology and Head of Department, University of Tennessee. Cloth. Price, $5 net. Pp. 424, with illustrations. New York: Chemical Catalog Company, Inc., 926.

The primary purpose of this book is to correlate in a general way some of the present information on the application of micro-organisms to industry. The author states that he is making no attempt to treat the subject exhaustively, and, with the number of processes described—thirty-one—no other recourse would be possible in a book of this size. Mechanical steps having little to do with microbiology are described briefly, if at all. Fermentations are thus discussed: (1) prevention of undesirable changes, as in bottled and canned goods, drinking water and meat products; (2) reactions achieved by fermentation and not feasible by another process, as in the manufacture of bread; (3) reactions produced more economically than by other processes, as in the manufacture of alcohol. The author has included a great deal of original material, and each chapter is followed by a bibliography of the material consulted. In the description of some of the processes, one receives the impression that it would have been advantageous to include more of the mechanical operation. The type and magnitude of some of the apparatus employed in many of the fermentation industries is usually nothing short of marvelous to one who is accustomed to observe micro-organisms under the microscope. In discussing the method of determining the phenol coefficient, on page 71, a typographic error has been made. In the sentence which now reads "at the end of which time readings of growth or no growth are made and entered in a table as — or + signs, respectively," the signs should be reversed. Food preservation processes are fully discussed. The control of undesirable fermentations in the dairy industry has extensive treatment, and an account of the bacteriologic control of milk is included. Although many chapters in the book are concerned with the prevention of undesirable fermentations, the major part of the monograph is devoted to productive fermentations. There are numerous illustrations. The book is commended to those who would obtain a survey of the importance of fermentation, with particular emphasis on industrial processes.

THE NATURAL INCREASE OF MANKIND. By J. Shirley Sweeney, M.A., M.D., D.Sc. Cloth. Price, $4. Pp. 185. Baltimore: Williams & Wilkins Company, 1926.

This work, which was Dr. Sweeney's thesis for his doctorate of science degree in hygiene at Johns Hopkins, is in chief part a statement of the problems of biometry and an introduction to the study of the scientific treatment of the factors that influence the trends of population. It is therefore not a popular treatise on the subject of population, but it is an interesting statement of the facts of population and the methods for their scientific treatment that have lately been emphasized. Altogether, it is a very informing book and can be commended to any one who is interested in this subject. Not the least interesting part is the introduction by Dr. William H. Welch, in which Dr. Welch, as always, is suggestive and in which he illustrates in this field the encyclopedic character of his scholarship. The increase of mankind is one of the fundamental problems of society in which medicine is involved. This book would furnish a good introduction for any physician who wishes to make a thorough study of the subject.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

BLOOD CHEMISTRY: Colorimetric Methods. For the General Practitioner; with Clinical Comments and Dietary Suggestions. By Willard J. Stone, B.Sc., M.D., Attending Physician, Los Angeles General Hospital and Pasadena Hospital. Introduction by George Dock, M.D. Second edition. Cloth. Price, $3.25 net. Pp. 129, with 7 illustrations. New York: Paul B. Hoeber, Inc., 1926.

Technic and interpretation of laboratory tests with practical suggestions.

HUMAN PHYSIOLOGY. By John Thornton, M.A. Revised by William A. M. Smart, M.B., B.S., B.Sc., Department of Physiology, London Hospital Medical College, University of London. Third edition. Cloth. Price, $3.75. Pp. 463, with 281 illustrations. New York: Longmans, Green & Co., Ltd., 1926.

British textbook of unusual brevity and little adapted to American curriculums.

HANDBUCH DER PRAKTISCHEN THERAPIE ALS ERGEBNIS EXPERIMENTELLER FORSCHUNG. Herausgegeben von Reinhard von den Velden, A. O. Professor an der Universität Berlin, und Paul Wolff, Dr. Med. et Phil., Berlin. Erster Band. Erste und Zweite Hälfte. Paper. Price, 66 marks. Pp. 1137, with illustrations. Leipsic: Johann Ambrosius Barth, 1926.

First parts of a new and expansive German compilation on therapeutics.

THE NATIONAL FORMULARY. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from July 1, 1926. Fifth edition. Buckram. Price, $3.50. Pp. 545. New York: Chemical Catalog Company, 1926.

Newest edition of official manual for druggists.

THE WHITE MAN IN THE TROPICS: With Especial Reference to Australia and Its Dependencies. By R. W. Cilento, M.D., B.S., D.T.M. & H., Director, Australian Institute of Tropical Medicine. Commonwealth of Australia, Department of Health. Service Publication (Tropical Division) Number 7. Paper. Pp. 168, with illustrations. Melbourne, 1926.

Helpful hints for those tropically inclined.

GESCHLECHTSKRANKHEITEN BEI KINDERN. Ein ärtzlicher und sozialer Leitfaden für alle Zweige der Jugendpflege. Herausgegeben von A. Buschke und M. Gumpert. Paper. Price, 5,40 marks. Pp. 108, with 10 illustrations. Berlin: Julius Springer, 1926.

Brief consideration of venereal diseases in children from medical and social points of view.

TALKS TO NURSES ON DIETETICS AND DIETOTHERAPY. By Ruth Wheeler and Helen Wheeler, The State University of Iowa. Cloth. Price, $1.50 net. Pp. 184. New York: W. B. Saunders Company, 1926.

Simple lectures for junior nurses, with especial reference to general principles rather than emphasis on details of individual diets.

MODERN METHODS IN THE DIAGNOSIS AND TREATMENT OF HEART DISEASE. By Francis Heatherley, M.B., B.S., F.R.C.S., Superintendent Heart Clinic, Manchester. Second edition. Cloth. Price, $3.75. Pp. 269. New York: William Wood & Co., 1926.

Well written essays based on large experience in the school of Mackenzie.

A MANUAL OF NORMAL PHYSICAL SIGNS. By Wyndham B. Blanton, B.A., M.A., M.D., Associate in Medicine, Medical College of Virginia. Cloth. Price, $2.50. Pp. 215. St. Louis: The C. V. Mosby Company, 1926.

An outline for students in physical diagnosis establishing the normal.

GENERAL ANÆSTHESIA: A Text Book for Students and Practitioners of the Art of Anæsthesia. By Dr. James G. Poe, M.D., Lecturer on General Anæsthesia in the Medical and Dental Departments of Baylor University. Cloth. Price, $2.75. Pp. 150, with 7 illustrations. Dallas: The author, 1926.

Brief practical outline of technic by specialist in anesthesia.

A JOY RIDE THROUGH CHINA FOR THE N. A. C. By Cora E. Simpson, R.N. Cloth. Price, $3 Mex. Postage extra. Pp. 263, with illustrations. Shanghai: The Kwang Hsueh Publishing House.

A nurse's description of nursing in China.

CRININUM SCRIPTIONES COLLECTAE ANNO 1924. Amsterdam: Bureau for Increasing the Use of Quinine, 1925.

Collected literature on quinine.

HEALTH HAZARDS OF BRASS FOUNDRIES: I. Field Investigations of the Health Hazards of the Brass-Foundry Industry. II. Laboratory Studies Relating to the Pathology of Brass Foundrymen's Ague. By John Arthur Turner, Ph.G., M.D., Acting Assistant Surgeon, United States Public Health Service, and L. R. Thompson, Surgeon, United States Public Health Service. Prepared by Direction of the Surgeon General. United States Public Health Service, Public Health Bulletin No. 157. Paper. Price, 20 cents. Pp. 75, with illustrations. Washington: Government Printing Office, 1926.

STUDIES IN NATURAL ILLUMINATION IN SCHOOL ROOMS: Parts I and II. A Report on the Observations of Daylight Illumination of Selected Classrooms of Different Orientation During the Period of an Entire School Year. By Senior Surgeon Taliaferro Clark, United States Public Health Service, and Physicist Arthur F. Beal, United States Public Health Service. Prepared by Direction of the Surgeon General. United States Public Health Service, Public Health Bulletin No. 159. Paper. Price, 15 cents. Pp. 57, with illustrations. Washington: Government Printing Office, 1926.

Medicolegal

Virginia Sterilization Act Held Constitutional

(Buck v. Bell (Va.), 130 S. E. R. 516)

The Supreme Court of Appeals of Virginia says that the appellant, by her guardian and next friend, complained of a judgment of the circuit court by which Dr. Bell, superintendent of the State Colony for Epileptics and Feebleminded, was ordered to perform on her the operation of salpingectomy, for the purpose of rendering her sexually sterile. At the time she was committed to the colony she was 17 years old, had the mind of a child 9 years old, was the mother of an illegitimate child of defective mentality, and her mother had theretofore been committed to the same colony as a feebleminded person. Unless sterilized by surgical operation, she must be kept in the custodial care of the colony for thirty years, until she became sterilized by nature, during which time she would be a charge on the state. If sterilized under the law, she could be given her liberty and secure a good home, under supervision, without injury to society. Her welfare and that of society would be promoted by such sterilization.

The judgment complained of was rendered by the circuit court on an appeal from an order of the special board of directors of the colony directing that the appellant be sterilized by the surgical operation of salpingectomy, the superintendent of the colony having presented a petition for such order. The proceeding was strictly in conformity with the statute. But it was contended that the judgment of the court was void because the Virginia sterilization act was repugnant to the provisions of the state and federal constitutions in that it did not provide due process of law, imposed a cruel and unusual punishment, and denied the appellant and other inmates of the state colony the equal protection of the law. However, the act complies with the requirements of due process of law. An adjudication by an impartial tribunal, vested with lawful jurisdiction to hear and determine the questions involved, after reasonable notice to the parties interested and an opportunity for them to be heard, fulfils all the requirements of due process of law. Nor could the contention that the statute imposed cruel and unusual punishment be sustained. The act is not a penal statute. The purpose of the legislature was not to punish but to protect the class of socially inadequate citizens named therein from themselves, and to promote the welfare of society by mitigating race degeneracy and raising the average standard of intelligence of the people of the state.

Nor does the statute deny to the appellant and to other inmates of the state colony the equal protection of the law. It was not controverted that the state may, in proper cases, by due process of law, take into custody and deprive the insane, the feebleminded and other defective citizens of the liberty which is otherwise guaranteed them by the constitution. The right to enact such laws rests in the police power. Under statutes providing for compulsory vaccination, a surgical operation is performed, as in the instant case, for the good of the individual and of society. Such statutes, although

they applied to school children only, have been upheld. It cannot be said that the act divides a natural class of persons into two, and arbitrarily provides different rules for the government of each. The two classes existed before the passage of the sterilization act. The female inmate, unlike the woman on the outside, was already deprived of the power of procreation by segregation, and must remain so confined until sterilized by nature, unless it is ascertained that her welfare and the welfare of society will be promoted by her sterilization under the act. There can be no discrimination against the inmates of the colony, since the woman on the outside, if in fact feebleminded, can, by the process of commitment, and afterward a sterilization hearing, be sterilized under the act. The court is of the opinion that the Virginia sterilization act is based on a reasonable classification, and is a valid enactment under the state and federal constitutions. The court has found no case involving similar statutes wherein the court has held that the state is without power to enact such laws, provided it be exercised through a statute that affords due process of law and equal protection of the laws to those affected by it. In the New Jersey case of *Smith* v. *Board of Examiners of Feebleminded, Epileptics, etc.*, 85 N. J. Law, 46, 88 Atl. 963, which this court declines to follow, the right to sterilize did not, as in Virginia, depend on whether the welfare of the patient would be promoted by the operation.

A Medical School Held Not to Be a Public Charity

(Hall v. College of Physicians and Surgeons (Mass.), 149 N. E. R. 675)

The Supreme Judicial Court of Massachusetts says that this action was in tort in two counts to recover damages for the conscious suffering and death of the plaintiff's intestate, alleged to have been caused by negligent medical care and treatment of the defendant's servants and agents while she was a patient, or by the negligent administration of certain drugs and medicines. The jury returned a verdict for the plaintiff on each count, and this court holds that the plaintiff was entitled to judgment on the verdicts, the action having been reported on the question of whether or not the defendant corporation was a charitable corporation within the intent of the law.

The defendant corporation was organized under "an act concerning associations for religious, charitable, educational and other purposes." The charter stated that the corporation was formed "for the purpose of establishing and maintaining a college for the prosecution and promotion of educational, scientific and medical purposes." A statute authorized and empowered it to confer the degree of doctor of medicine. The charter, however, did not of itself make the defendant a public charity. The controlling purpose must be for the common and public benefit, and if the defendant was created by the incorporators, or thereafter was administered and maintained by their successors for money-making, this essential element was lacking even if the defendant may at times have expended money for purposes, or rendered gratuitous services, which in common speech are called charitable. The defendant still would be acting within its charter powers if it charged every student in full for tuition, and clinical patients for medical care and treatment.

An announcement of the college stated that a limited number of suitable persons who gave satisfactory evidence of their inability to pay the regular college fees might be enrolled as students, and that it was hoped that as many friends of the college as were able would provide funds to aid deserving students. A physician who testified that he had general charge of the college, and his wife, who was its treasurer, were the principal witnesses. He testified that the college was in full operation in 1917, performing all the functions of a medical school, and that there was a dispensary—a corporation—which occupied part of the building in which the college was located, to which dispensary students of the college were assigned. The dispensary was advertised in the catalogue to make the college more attractive to students, and, while there was a great deal of charitable work done at the dispensary, three fourths of the patients were not charitable patients, and the remunerations of the professors were enhanced because of the dispensary, which was not conducted for profit. The income of the college was derived principally from fees of students, and in part from a trust fund under a will, with some minor donations. The college was educating men and women in the science of medicine and surgery, "just like other medical colleges, and sold nothing for profit." Tabulations of the treasurer for the years 1912 to 1917 showed only moneys received from students and payments to professors and instructors and to herself and her husband during that period. If, without deciding, it be assumed, as the defendant contended, that there was evidence that it was a public charity, yet the jury, under appropriate instructions, could find that the college was conducted primarily for the private ends of those who managed it.

Question Not Tending to Blacken Patient's Character

(Skruch v. Metropolitan Life Ins. Co. (Pa.), 131 Atl. R. 186)

The Supreme Court of Pennsylvania, in reversing a judgment obtained by the plaintiff on an insurance policy which the defendant company had issued in her favor on the life of her husband, says that the defendant alleged that the insured had given false answers to certain questions which were material to the risk, as that he had never had convulsions; and "affections, none." A physician who had attended him was asked to state whether or not he had treated the insured for epilepsy or convulsions. The trial court excluded the question because the physician had indicated to the court that the specific disease of which the insured was suffering was a loathsome one, of which epilepsy and convulsions were only symptoms. This ruling was based on the Pennsylvania act of 1907, which provides that no person authorized to practice physics or surgery shall be allowed, in any civil case, to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity, which shall tend to blacken the character of the patient, without the consent of the patient. But it is clear that, if a man has had convulsions and epilepsy, he has had them whether or not they were symptoms of some other disease. Yet the insured had denied that he had ever had them, and the question which was overruled was asked for the purpose of showing that he had thus made untrue answers in his application. Admittedly, a man may have had either or both of those complaints without this fact, if known, tending in any way to blacken his character. If the defendant, having received an affirmative answer to the question propounded, had then attempted to follow it up by an inquiry which, if answered, would have shown that the convulsions and epilepsy were symptoms of a loathsome disease, the act of 1907 would have been applicable, and an objection to the later inquiry would have been properly sustained. That, however, was not the question asked.

Second Conviction—Proof with Regard to License

(State v. Deadwyler (S. C.), 130 S. E. R. 332)

The Supreme Court of South Carolina, in affirming a judgment of conviction, says that it appeared from the testimony that the defendant was a chiropractor. On the first Monday in November, 1924, there were two indictments found against him for practicing medicine without a license. The first charged that he practiced on one Pruitt and other persons, Nov. 1, 1923, and divers other days before and after that date. The second indictment charged that he committed a like offense by practicing on one Bill Edwards and other persons, May 28, 1924, and on divers other days before and after that date. The defendant was tried at the November, 1924, term of court, was convicted, and served his sentence. He was put on trial at the summer term of 1925, under the second indictment. He demurred to the indictment, on the ground that the trial and conviction had at the November, 1924, term of court embraced all matters prior to that date, as to time and persons, and constituted a bar to the last indictment; but the demurrer was overruled, and conviction followed. The statute under which the indictments were brought provided that each day of its violation should constitute a separate

offense; and this court does not agree with the contention that the use of the words "of divers other days before and after said date" embraced all of the time prior to the finding of the true bill under the indictment, and that the words "upon one Bill Edwards and other persons" embraced all persons up to such time, and that the conviction not only embraced the conviction for practicing on Pruitt, but on all other persons and at all other times prior to that date. The proving of the date of the commission of the act in this case was not material. It was only to allege with certainty the person on whom the defendant practiced. This was done by naming "one Bill Edwards," and this was sufficient.

Nor does the court agree with the contention that it was error to allow a member of the state board of medical examiners to testify, over objection, that the defendant had not obtained a license from the state board of medical examiners, the error alleged being that the witness was permitted to testify from his own knowledge, instead of producing the records of the board. The defendant said that it was incumbent on the state to show that he did not have a license. No question was raised as to the proof of the fact that he did practice on one Bill Edwards. It was made unlawful to do so, by statute, without having a license. This being so, while it was necessary to make the negative averment in the indictment, the act having been proved, it was incumbent on the defendant to show that he had a license. Even if the testimony of the member of the board should not have been admitted, the defendant could not complain. He knew whether he had a license and could have produced it, and he offered no testimony. But this court is of the opinion that there was no error in admitting the testimony of the member who testified that the defendant had not taken the examination of the board, had never appeared before the board, had not been granted any regular license to practice, nor granted a license to practice any specialty, such as chiropractic or osteopathy, or any separate part of the business of practicing; had never been granted any kind of license. This in no way altered the rule that the best evidence must be produced. One can always speak of his own knowledge of substantive facts within his knowledge. He must know the facts, and, knowing them, can relate them.

Unnecessary Averments in Indictment

(Robinson v. State (Ala.), 106 So. R. 203)

The Court of Appeals of Alabama, in affirming a judgment of conviction of defendant Robinson, says that the indictment in this case was returned at the January, 1922, term of the circuit court, and that the trial thereunder was held in February, 1925. The indictment charged the defendant with the offense denounced by section 7564 of the code of 1907, as amended in 1915, which prohibits any person from treating or offering to treat diseases of human beings without having obtained a certificate of qualification from the state board of medical examiners. The only question presented on this appeal was the action of the trial court in overruling demurrers to the indictment. All that is necessary in an indictment properly to charge this offense is:

> The grand jury of said county charge that, before the finding of this indictment, A. B. (naming the defendant) did treat or offer to treat diseases of human beings in this state without having obtained a certificate of qualification from the state board of medical examiners, against the peace and dignity of the state of Alabama.

Such averments in the indictment as were here contained, namely, by a system known as chiropractic for a reward, are not necessary to a valid indictment. As stated, the offense denounced is treating, or offering to treat, human diseases, without a certificate of qualification from the state board of medical examiners; and, the quoted averment, "by a system known as chiropractic for a reward," is not an element of the offense. The phrase in the statute, "by any system of treatment whatsoever," is no part of the description of the offense. However, as to the unnecessary averments, above mentioned, in the indictment in the case at bar, they in no manner vitiated the indictment. They very probably subjected the indictment to proper demurrer, but the demurrers interposed here did not raise the question. The demurrers that were interposed to the indictment were properly overruled.

Society Proceedings

COMING MEETINGS

American Ophthalmological Society, Hot Springs, Va., June 14-16. Dr. Emory Hill, Professional Building, Richmond, Va., Secretary.

American Orthopsychiatric Association, New York City, June 5-6. Dr. Karl A. Menninger, Mulvane Building, Topeka, Kansas, Secretary.

American Psychiatric Association, New York City, June 8-11. Dr. Earl D. Bond, 4401 Market Street, Philadelphia, Secretary.

American Psychopathological Association, New York City, June 11. Dr. Sanger Brown II, 173 East 70th Street, New York City, Secretary.

American Therapeutic Society, Philadelphia, June 10-12. Dr. W. J. Mallory, 1720 Connecticut Ave., N. W., Washington, D. C., Secretary.

Associated Anesthetists of the United States and Canada, Nottingham, England, July 20-23. Dr. F. H. McMechan, Avon Lake, Ohio, Sec'y.

Maine Medical Association, Poland Springs, June 10-12. Dr. B. L. Bryant, 265 Hammond Street, Bangor, Secretary.

Massachusetts Medical Society, Springfield, June 8-9. Dr. W. L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, Ann Arbor, Mich., June 8-9. Miss Harriet Wilson, 535 North Dearborn Street, Chicago, Secretary.

Montana, Medical Association of, Billings, July 16-17. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.

National Association for the Study of Epilepsy, New York City, June 7-8. Dr. A. L. Shaw, 108B The Albiston, Utica, N. Y., Secretary.

New Jersey, Medical Society of, Atlantic City, June 17-19. Dr. J. B. Morrison, 97 Halsey Street, Newark, Secretary.

North Carolina, Medical Society of the State of, Wrightsville Beach, June 15-17. Dr. L. B. McBrayer, Southern Pines, Secretary.

Oklahoma State Medical Association, Oklahoma City, June 22-24. Dr. C. A. Thompson, 609 Barnes Building, Muskogee, Secretary.

Wyoming State Medical Society, Lander, July 12-13. Dr. Earl Whedon, Sheridan, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-First Annual Meeting, held at Atlantic City, N. J., May 4-5, 1926

DR. RICHARD P. STRONG, Boston, in the Chair

Heart Disease in New England

DRS. PAUL D. WHITE and T. DUCKETT JONES, Boston: Nearly 3,000 cases have been tabulated. A striking feature was the high incidence in persons under 20 years of age, seen in hospital practice; this is largely due to admissions for rheumatic infections. In private practice the incidence is among older persons. In consultation cases there is a high incidence of functional disorders among elderly persons. In hospital cases, rheumatic disease forms a very high incidence, 49 per cent; in the three groups together the incidence is 41 per cent. Bacterial endocarditis is equally divided among the three groups. The hypertensive and the arteriosclerotic groups constitute about 51 per cent of the total series. The coronary occlusion group seems more frequent among consultation cases, as a result of the higher age incidence of the consultant's patients, and also of more careful histories. The figures for syphilitic disease seem rather low in New England (4 per cent), as compared with those quoted for New York. The congenital rate is high in the hospital series, because many syphilitic children are referred for treatment. Cases classified as unknown form 2.5 per cent of the total series. Angina pectoris runs higher in the consultant series. The total percentage of angina pectoris in all forms of disease is 15.9. Effort syndrome constitutes 47 per cent of the functional conditions. Functional systolic murmurs are most often seen in children. Of the organic lesions, chiefly rheumatic cases, mitral lesions form 24 per cent; aortic, 2.3 per cent; mitral with aortic, 13.5 per cent, and pericarditis 2.7 per cent. Aneurysm is rare, only 0.7 per cent; flutter is also rare, 0.2 per cent of all lesions. More than one condition is often present in the same patient.

DISCUSSION

DR. J. S. MCLESTER, Birmingham, Ala.: I should like to point out the relative infrequency of rheumatic fever in the South. We see very few rheumatic hearts, as contrasted with the figures given by Dr. White. If I could hazard a guess, the number would be nearer 10 per cent.

DR. W. S. THAYER, Baltimore: After a study of thirty-six years in the Johns Hopkins Hospital, I do not think there is so great a difference in the frequency of occurrence of angina

pectoris among hospital patients, or a change in the manner of life and of the class; but there is a great difference in the care with which patients are interrogated and the way in which the symptoms are evaluated and the diagnosis made on the way in which the patient describes his symptoms. A large number of patients cannot give an intelligent account of their symptoms, but if one interrogates them with very careful questioning so as to get a history of anginoid symptoms, one finds a surprising number of cases. That explains the increase in angina, rather than a great difference in the class of patients. Angina from the standpoint of the anatomic changes is, I fancy, not much more frequent today than it was thirty years ago. I think we have seen very much more angina in recent years in hospitals because we have looked for it. It is hard to get a colored patient to give an intelligent account, but if questioned carefully one finds he has the characteristic symptoms.

DR. LEWIS A. CONNER, New York: There is one point that the speaker mentioned which deserves emphasis in the discussion. In contrasting rheumatic and syphilitic cases of aortic insufficiency, he noted that syphilitic insufficiency was slightly larger than purely rheumatic insufficiency. There is a widespread misconception as to the relative frequency of these conditions. The rheumatic type in the hospital series is under 2 per cent and the syphilitic type over 2 per cent. The rheumatic type associated with mitral disease is 15 per cent. I am convinced that in our gradually increasing emphasis on syphilitic cases of aortic insufficiency we are swinging too far. Students get the impression that the syphilitic type of aortic insufficiency is much more common in adults than the rheumatic type. I think that is entirely wrong. While rheumatic cases may be less frequent in the hospital wards, they are not such an acute condition that physicians in the wards do not see them. They are apt to be seen in the outpatient department rather than in the ward.

DR. JOSEPH PRATT, Boston: My own series of case results are similar to those presented in the paper. In 312 cases of organic heart disease seen in the hospital, there were five cases of syphilitic origin. The Wassermann test was done regularly, and the aorta was examined with the fluoroscope. These figures, however, are a contrast to studies by other observers in private practice. When I was in the South I made an intensive study in Georgia and Alabama and I was impressed with the great rarity of rheumatic heart disease, especially of mitral stenosis; but there were many cases of syphilitic heart disease among negroes.

DR. HARLOW BROOKS, New York: I was surprised that so few cases of syphilitic mitral stenosis were recognized, and also syphilitic angina pectoris, as this is very frequent. I think that if the figures are higher in New York it is not on account of the greater moral obliquity there, but because of the fact that we are rather apt to exchange cases and to send patients to men who are particularly interested in them, so that some cases are rather overestimated and some underestimated; that is true of cases of syphilitic heart disease if we rely solely on the Wassermann reaction, which is often misleading. I believe that the history and clinical findings are much more reliable in these cases.

DR. T. DUCKETT JONES, Boston: Aortitis may occur with or without cardiac involvement. There are a number of angina pectoris cases in the syphilitic group, but they are included with other diagnoses. It was impossible in the time allotted to analyze the cases more fully, but this material will be given in the more detailed report to be published.

Relation of the Toxemias of Pregnancy to Hypertensive Cardiovascular Disease

DRS. W. W. HERRICK and JEAN CORWIN, New York: The disease called toxemia of pregnancy includes a very miscellaneous group of symptoms, such as pernicious vomiting, visceral disturbance, toxic jaundice and severe anemia, so that a study of disturbance of a single organ would be inadequate. We have applied another type of study and have taken the antenatal period as well as a follow-up study lasting from three months to six years, making a postpartum study of some women through successive pregnancies. The subacute type with hypertension forms the largest group; these women show a blood pressure of about 180, albuminuria, edema, oliguria, perhaps mental symptoms, and often death of the fetus. Often with the delivery of the fetus the symptoms clear up. The blood chemistry often shows increase of uric acid and cholesterol. There are frequent cardiovascular changes with tortuosity of the retinal arteries, often hemorrhages and white spots in the choroid. We have followed up 165 cases of this subacute type for a prolonged period and have classified them according to their blood pressure, anything over 140 being considered hypertensive. As the blood pressure rises, the number of cases showing displaced apex is increased, and 50 per cent of hypertensive cases show retinal changes. The status of the blood pressure is important. After delivery it will often return to normal, but after a few months or years it goes back to above normal. In a summary of blood pressure readings it was shown that from 71 to 100 per cent had persistent hypertension, according to the severity of the previous blood pressure rise. These cases, which are of mild type, and frequent, merit more attention from the obstetrician because, if followed up, they later show definite organic cardiovascular changes. These women represent a class of substandard cardiovascular make-up, who react to the strain of pregnancy as do others to the wear and tear of daily life.

DISCUSSION

DR. W. S. THAYER, Baltimore: In what proportion of these patients were you able to obtain a history of what the condition was before the onset of symptoms with undisguised eye changes?

DR. JOSEPH L. MILLER, Chicago: The average obstetrician does not think of later consequences. I have a series of cases in which the pressure was taken previous to pregnancy, and the hypertension was persistent over several years.

DR. J. P. O'HARE, Boston: What was the evidence that there was not any previous kidney disease, because retinal arteriosclerosis indicates previous hypertension in 95 per cent of cases? It takes a certain length of time—at least five years—for retinal arteriosclerosis to develop.

DR. W. W. HERRICK, New York: Many of these cases have a long standing history of cardiovascular disease if followed through previous pregnancies. We can predict what will happen. The patient with cardiovascular disease reacts in this way with hypertension and albuminuria. As regards prognosis, we cannot be very definite. Thirty-seven per cent reacted with persistent hypertension, and 64 per cent showed changes of various kinds. I think pregnancy is a test of the maternal organism. Probably these patients react to the wear and tear of pregnancy as they finally will react to the wear and tear of life.

Treatment of Attacks of Syncope Occurring in Adams-Stokes Disease

DR. SAMUEL A. LEVINE, Boston: The symptoms of Adams-Stokes disease are characterized by congestive heart failure and very slow heart rate. This may be as low as 20, which is too slow, but with a rate of 35 the patient may be able to be physically active. Patients also suffer from syncopal attacks which may end fatally. To treat these attacks is important in persons who would otherwise be fit. Some patients have attacks every hour or even as often as every ten minutes. If the patient has syncope with complete standstill of the heart, intravenous injection is useless because the drug does not circulate. What method have we for further prevention of these attacks? Barium chloride by mouth, 30 mg. four times daily, apparently has a favorable influence. It is an irritant of the vagus and thus stimulates the heart beat.

DISCUSSION

DR. PAUL D. WHITE, Boston: One patient was relieved by barium chloride for several months. Then there was a recurrence of the attacks, and barium chloride was not effective. After that epinephrine was used with good effect.

DR. FRANK N. WILSON, Ann Arbor, Mich.: During the last year three patients have died of Adams-Stokes disease at Ann Arbor. Two received epinephrine directly after death but neither patient was revived. One case was similar to that quoted by Dr. Levine. The attack lasted fifty-five seconds. The heart was made to beat by striking the precordium, and normal rhythm returned.

DR. S. A. LEVINE, Boston: The routine therapy in our cases was to give epinephrine thirty minutes subcutaneously, 0.5 cc. of a 1:1,000 solution. The combination of barium chloride with epinephrine increased the irritability of the ventricle.

Effects of Hepatic Extract on Arterial Hypertension

DR. RALPH H. MAJOR, Kansas City, Mo.: We have made a study of various metaboloids. Guanidine produces a marked, sustained rise of blood pressure, the same as that obtained in arterial hypertension. We have studied hypertension and possibly the means of removing it by producing a substance capable of counteracting guanidine hypertension. Liver extract is very helpful. Histamine gives a different result. To show this it was necessary to procure pure liver extract free from the histamine and choline content. We tried the effect of liver extract on patients suffering from hypertension. We found that patients vary in their response, and that the same patients will vary from time to time. The results in patients confined to bed have been less satisfactory, perhaps because the dosage was too small; perhaps because there was considerable arterial injury. The best class of patient would be the young person with hypertension just beginning.

DISCUSSION

DR. B. S. OPPENHEIMER, New York: We have given pure liver extract, freed from histamine and choline, in cases of essential hypertension, with a systolic pressure of 200 or over and a diastolic pressure of 100 or over. At first we had some good effects with the first lot of preparations used; lately we have had no effect. Perhaps the explanation is that the blood pressure reducing substance is unstable.

DR. J. S. MCLESTER, Birmingham, Ala.: We have been working on guanidine bases and have observed the effects of liver extract on a certain group of patients under 45 years, with early hypertension. Our results have been favorable. We frequently saw a drop following its use, lasting many hours, and occasionally we saw improvement with relief from the headache which did not respond to other measures. In a few instances we saw mild shock and dizziness, but we could not see any lasting effect on the blood pressure.

DR. LEWIS A. CONNER, New York: In what percentage of the cases tested with liver extract were such striking results obtained as those recorded on the last chart shown? What proportion of the cases showed any results?

DR. J. P. O'HARE, Boston: One fact stressed by Dr. Major should be emphasized, and that is that the preparation must be absolutely fresh. Another point to be noted is that Dr. Major has used very large doses by comparison with other workers. At the Peter Bent Brigham Hospital we have used smaller doses, but the results have not been entirely satisfactory. In two cases out of seventeen there was effect; in fifteen cases there was not any effect. We have never had a preparation that was absolutely good. If we could be certain of the stability, the results might be different.

DR. H. O. MOSENTHAL, New York: We have had the same results as those reported by Dr. McLester and Dr. Oppenheimer, but in two out of fifteen cases treated the results have been very gratifying. One blood pressure came to the normal level from 200, and in another case the blood pressure came down and the symptoms subsided. I feel very strongly that Dr. Major has a preparation which, when properly handled, is going to relieve hypertension and relieve a disease that is extremely widespread. I think that the experimental evidence at hand shows that the preparations we have been receiving are not stable.

DR. RALPH H. MAJOR, Kansas City, Mo.: In regard to Dr. McLester's remarks: we have been very much impressed with the relief of headache, tinnitus, dizziness and other disagreeable symptoms. Of course, the psychic element is hard to rule out, but the results are very striking and cannot be explained entirely by the psychic effect. We started by trying to give uniform dosage, with little result; then we tried giving a dose that would reduce hypertension, and we gave 15,000 units a day as standardized against guanidine. In regard to the percentage of response, that is a difficult question to answer. There is a great deal of personal equation in the question as to whether there is response. When the patient gives a response, one does not know whether it is spontaneous or not. We have one woman whose pressure goes down following dosage, but we do not know whether this is a response to the drug, or whether she has a cycle of hypertension. Cases must be observed for a much longer time before we can make any statement as to the result.

Leukemoid Blood Pictures

DR. E. B. KRUMBHAAR, St. Louis: We have made a study of blood pictures in nonleukemic cases which resemble the blood picture of leukemia cases, some cases very closely approaching the leukemia slides. In two cases there was a lymphocytosis of 75 per cent during an acute infection. In another case, a chronic carcinoma of the breast, the leukocytes numbered 120,000, with 92 per cent polymorphonuclears. Some of these cells are immature forms. The diagnosis was never in doubt, but if it had been made from the blood picture alone it would be thought to be myeloid leukemia. In a case of gas poisoning, the blood count fell and then rose, the rise being due to myelocytes. Such reactions have also been seen in cases of acute pelvic infection in women. Emphasis should be placed on the extreme length to which some of these reactions may go, and the atypical nature of them; also the difficulty of making a differential diagnosis from leukemia if the blood picture alone is taken into consideration.

Pulmonary Changes Following Artificial Hemoptysis

DRS. CHARLES R. AUSTRIAN and H. S. WILLIS, Baltimore: It is a matter of clinical observation that the roentgen-ray shadows of lungs of patients often show mottlings which later disappear. It would seem that there are two types of tuberculosis, those in which it progresses with the course of the disease, and some that go on to healing, the shadows being due to collateral inflammation or healed tubercles, or to an exudative lesion, as is seen in animals with healed tubercles when a tuberculous infection is added. In experimental animals previously infected we were not able to produce diffuse miliary tuberculosis, but the lesions were an exudation of leukocytes and serum due to sensitization on the part of the animal from previous infection. I believe that in hemoptysis in the human being, due to an existing allergy, the shadows are often due to collateral inflammation about the site of lodgment of the bacilli. In these cases there is a more favorable prognosis than is usually given.

DISCUSSION

DR. HOMER F. SWIFT, New York: Were the tuberculous animals injected with blood plus tubercle bacilli? I believe that in tuberculous tissues there is a substance which, when added to tuberculosis, is more irritating than the bacilli alone. In hemoptysis I think it is due to that state of affairs rather than normal blood going into the lung.

DR. CHARLES S. AUSTRIAN, Baltimore: We have used blood of tuberculous rabbits with tubercle bacilli, and also blood alone and we have seen no difference in the reaction. For that reason we used normal blood with bacilli rather than blood of infected animals. Whether there is any difference in the speed of reaction I am not prepared to answer. The test rabbits were infected by bovine tuberculosis. We had two groups, normal rabbits and infected rabbits. They were injected intratracheally with suspension of tubercle bacilli in normal blood. In the first group the roentgenogram did not show as much disease as was demonstrated at necropsy.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

31: 459-602 (April) 1926

*Biliary Cirrhosis. L. G. Parsons and E. M. Hickmans, Birmingham, England.—p. 459.
*Chronic Interstitial Hepatitis. G. F. Munns, Chicago.—p. 469.
*Death Following Inhalation of Zinc Stearate. K. Schlaepfer, Milwaukee. —p. 474.
Defects in Membranous Bones, Diabetes Insipidus and Exophthalmos. B. S. Denzer, New York.—p. 480.
*Syphilitic Endarteritis in Children. H. M. Gilkey and C. C. Dennie, Kansas City, Mo.—p. 483.
*Erythema Infectiosum: Seventy-Four Cases. T. P. Herrick, Cleveland Heights, Ohio.—p. 486.
Respiratory Metabolism in Infancy and in Childhood. III. Glycogen Storage. S. Z. Levine, J. R. Wilson and H. Rivkin, New York.—p. 496.
*Uric Acid and Creatinine in Urine of Infants. O. S. Rougichitch, Boston.—p. 504.
Plasma Chlorides in Acute Intestinal Intoxication of Children. G. L. Boyd, Toronto.—p. 514.
*Quantitative Method for Determination of Combined Urea and Ammonia Nitrogen of Saliva. F. W. Schultz and M. R. Ziegler, Minneapolis. —p. 520.
*Paratyphoid Fever in Infant. D. Gingold and H. Wexler, Brooklyn. —p. 522.
Appendicitis in Children Under Five Years of Age. F. Christopher, Winnetka, Ill.—p. 525.

Biliary Cirrhosis.—A case of biliary cirrhosis is described by Parsons and Hickmans in which there was evidence of obstruction of the bile ducts, but not in their extrahepatic course. The argument is brought forward that this case supports the view that the hepatic cirrhosis occurs in at least as early a stage of this disease as the changes in the bile ducts. Metabolism balance experiments show that: fat is well split; there is an increased formation of fatty acid; fat absorption is poor; nitrogenous absorption is good; there is a negative balance for calcium, and phosphorus absorption is good; a very great proportion of the excretion of phosphorus is via the urine. The presence of large quantities of unabsorbed fat in the intestine—due to the exclusion of bile—resulted in a negative calcium balance, and a deviation of phosphorus to the urine, but had no effect on the absorption of nitrogen.

Chronic Interstitial Hepatitis.—A case of chronic interstitial hepatitis occurring in an infant, aged 11 months, the first sign of which appeared on the eighteenth day, is reported by Munns. The etiologic agent could not be determined. Possibly, there was a slow infectious process, as evidenced by exacerbations and remissions in the signs and symptoms, particularly the frequent and intermittent rises in temperature.

Death Caused by Inhaling Zinc Stearate.—Schlaepfer reports the case of a child, aged 7½ months, who died thirty-four hours after inhaling zinc stearate. Cyanosis and dyspnea characterized the clinical course of the illness, and a state of "acidosis" was noted twelve hours before death. At necropsy, the lungs were voluminous. Extensive areas of emphysema were separated from each other by small, scattered, atelectatic zones. The bronchioles contained plugs of zinc stearate and mucus, which appeared as wormlike masses. The gross picture was confirmed histologically, and the presence of extensive edema was determined. The edema involved the alveoli, especially the more atelectatic ones, and the subpleural and interlobular connective tissue septums. The lymphatics throughout the lung were conspicuously dilated. In spite of oxygen inhalation, persistence of the dyspnea may have been due to acidosis brought about by incomplete obstruction to the bronchioles with zinc stearate.

Syphilitic Endarteritis in Children.—One of the patients seen by Gilkey and Dennie was a colored girl, aged 3 years. The entire dorsum of the right foot was of a bluish hue. The three middle toes and the ends of the great toe and little toe were black. On the plantar surface of the foot there was a large black bleb, extending about 2 inches backward from the three middle toes. The second patient was a Mexican girl, aged 3 years. She had a large ulcer on the outer aspect of the right leg, extending from the external malleolus for one-third up the leg. Each patient received the same type of treatment, namely, 0.15 Gm. of neo-arsphenamine, intravenously, every week for eight weeks. Potassium iodide was given internally. Both patients recovered promptly, but the first patient lost two toes.

Erythema Infectiosum.—The evidence presented by Herrick indicates that the disease is a distinct entity, is infectious, and results in the establishment of a specific immunity. The distinguishing features of the disease are its occurrence in epidemics, the lack of constitutional symptoms, the lack of any features distinctive of the other exanthems, the long course and characteristic progression of the rash, its evanescence at all stages, and particularly the irregular but brilliant outlines seen on the arms and legs in the third stage and in the recurrences.

Uric Acid and Creatinine Excretion of Infants.—The uric acid excretion per twenty-four hours was measured by Rougichitch in a series of twenty-two male infants. The diet of the infants being purin free, the amounts of uric acid are regarded as of endogenous origin. In contrast with most of the hitherto published measurements of uric acid in infants' urine, a closely constant daily excretion was found for the individual, and a fairly constant value per unit of body weight for the group of infants, the range being from 14 to 25 mg. of uric acid per kilogram of body weight. Except in the case of an infant with active rickets, whose uric acid excretion was high (36 and 34 mg. per kilogram of body weight) no relationship of nutritional state to uric acid excretion was apparent. Uric acid excretion was also apparently independent of the age of the infant. It is suggested that the relatively high level of endogenous uric acid by infants may be explained by their high protein intake. Measurements of urine creatinine in the same group of infants support the conception of a close constancy of creatinine excretion in terms of the protoplasmic mass of the body. The range found was from 10 to 15 mg. per kilogram of body weight. The highest values were obtained in malnourished infants, probably because of their relatively larger mass of active tissue. No relationship of creatinine to differences in sleeping time or no muscular tonus was discernible. However, in the case of an infant having severe generalized convulsions, a creatinine excretion three to four times higher than normal was observed. Another infant with slight localized convulsions was found to excrete an approximately normal quanity of creatinine.

Determination of Urea and Ammonia Nitrogen of Saliva.—The method described by Schultz and Ziegler is a modification of that for the determination of blood urea described by Folin. The values obtained by its use are said to approximate those of blood-urea nitrogen more closely than do the results afforded by any other published method.

Paratyphoid in Infant.—A case of paratyphoid fever in an infant, aged 18 months, is reported by Gingold and Wexler. The salient clinical features were persistent abdominal pain of three months' duration, marked secondary anemia, a relatively brief febrile period, and isolation from the blood of *Bacillus paratyphosus* B.

American Journal of Medical Sciences, Philadelphia

171: 313-468 (March) 1926

*Mortality and End-Results of Splenectomy. W. J. Mayo, Rochester, Minn.—p. 313.
*Confusion Between Acute Leukemia and Infectious Mononucleosis: Case of Acute Lymphoblastic Leukemia with Remission. H. P. Schenck and O. H. P. Pepper, Philadelphia.—p. 320.
Influence of Rest, Sleep and Work on Heart Action. L. Kanner, Yankton, S. D.—p. 331.
*Positive Centrifugal Venous Pulse: New Method for Its Detection. W. S. Middleton, Madison, Wis.—p. 341.
*Raynaud's Disease: Case with Extensive Bone Involvement. J. J. Monahan, Chicago.—p. 346.
*Response of Normal Human Stomach to Various Standard Foods and Summary. P. B. Hawk, M. E. Rehfuss and O. Bergeim, Philadelphia. —p. 359.

Some Reasons for Poor Results Following Gastro-Intestinal Surgery. R. S. Boles, Philadelphia.—p. 369.
Proper Classification of Cerebral Palsies of Early Life. B. Sachs, New York.—p. 376.
*Incipient General Paralysis. H. A. Bunker, Jr., New York.—p. 386.
*Alcoholic Injections into Nerve Tissues for Relief of Pain. G. I. Swetlow, New York.—p. 397.
*Function of Autogenous Kidney Transplant. K. Ibuka, Rochester, Minn. —p. 407.
*Function of Homogenous Kidney Transplant. K. Ibuka, Rochester, Minn. —p. 420.
*Renal Sepsis Associated with Manic Depressive Insanity. E. F. Kilbane, New York.—p. 433.

Mortality of Splenectomy.—Mayo says that if a patient is properly rehabilitated and on the up-grade, the result of proper methods of preparation, the mortality of splenectomy will be less than 5 per cent. The dangers of the operation are largely in delay and in an unfortunate choice of cases.

Acute Leukemia and Infectious Mononucleosis.—A case of acute leukemia is reported by Schenck and Pepper, of the lymphatic or lymphoblastic type, in which, during a remission perhaps induced by treatment, the blood picture passed through stages at which it closely resembled infectious mononucleosis and even reached the stage where it resembled the picture of agranulocytic angina. A rapid return of the leukemic blood picture, however, followed with fatal outcome.

Detection of Positive Centrifugal Venous Pulse.—It is suggested by Middleton that the simple procedure of elevating the arm may establish the presence of a positive centrifugal venous pulse in the radial vein in cases of relative tricuspid insufficiency, and that this phenomenon is not observed in normal controls or in any conditions under which the ventricular type of venous pulse has been described, other than tricuspid insufficiency.

Raynaud's Disease with Bone Involvement.—Monahan reports a case of Raynaud's disease which showed few of the classic Raynaud phenomena and in which parts of the body skeleton of the foot were sloughed out in a discharge (corresponding no doubt to the "seropurulent liquid" mentioned by Raynaud), which was found on examination to be sterile. Postoperative dissection showed a remarkable adaptation of the crippled foot to the demands made on it by change in position for weight bearing.

Response of Normal Stomach to Foods.—The result of this research by Hawk et al. shows that there is a certain characteristic response of the stomach for each variety of foodstuff. The results also serve to emphasize the ability of the normal stomach to satisfactorily handle a great variety of foods. In each particular instance, the stomach has a certain amount of work to do which in health it does in a highly characteristic manner. The digestion of meats is of great interest, and the same thing is true regarding the digestion of fresh vegetables. With the raw vegetables, however, digestion is much more of a mechanical procedure, but in each instance the test of a normal stomach is the ability of that stomach to handle these substances in characteristic fashion. In experiments it was apparent that functional diseases almost resulted in either a delay in evacuation or in a rise in the acid secretion or, again, in a failure of the stomach to react rapidly to the food in question.

Incipient General Paralysis.—A study of the earliest symptoms which may occur in patients who later develop outspoken general paralysis was made by Bunker in seventy-four cases. He found that irritability occurred as the earliest abnormality, or one of the earliest, in forty-two cases. The character change, whereby an individual is reduced in activity and spontaneity, loses some of his interests, tends to withdraw into himself, and is often described as having become "quiet," is likewise a common early symptom, for it occurred in twenty-eight cases. Loss of weight ranks as third. It occurred—and very often early—in twenty-two cases. An increased tendency to sleep was an early manifestation in fifteen cases. Speech defect, memory defect and judgment defect have considerable diagnostic value in themselves, but occurred among the earliest symptoms in only eleven, fifteen and seven cases, respectively. Visual impairment, digestive disturbance, insomnia, fatigability, headaches, tremor, and rheumatoid pains were present as the earliest manifestations in a few cases.

Alcoholic Injections into Nerves Relieve Pain.—Alcoholic injections into nerve tissues for the relief of pain has proved a valuable therapeutic procedure in Swetlow's experience. In five cases of pulmonary tuberculosis with pleuritic pain, Swetlow injected those intercostal nerves whose skin areas were hyperalgesic to pin prick. The patients have been relieved from their pain since the injection, that is, from thirty-five to 107 days. In three cases of headache the involved nerve was injected with successful results; likewise, in one case of tabes with crisis. In one case of pain in cardiac disease, paravertebral injections of alcohol gave relief. In a case of pruritus ani the introduction into the epidural space of a 20 per cent solution of alcohol in saline solution was followed by immediate and lasting relief.

Function of Autogenous Kidney Transplant.—Ibuka reports on the successful experimental transplantation of kidneys into the neck of dogs. The transplanted kidney functions for months in a practically normal manner, coexisting with the normal kidney in the abdomen; it also maintained the life of the animal in good health for a fairly long time after the excision of the other kidney, while preserving its own functional activity. One transplanted kidney was in good condition four months after the removal of the other kidney. Analysis of chemical constituents of urine from the transplant, as well as various functional tests made on it, simultaneously with the investigation of the remaining kidney in the abdomen or after the removal of this sister organ, showed a fairly normal kidney function. An apparently compensatory activity of the transplant was observed after ablation of the other kidney. The extrinsic nerve supply to the kidney and the ureter, Ibuka says, plays a minor and unessential part in their function, as the transplanted kidney functions equally well in the new location, and the renal pelvis and ureter show even an increased peristalsis. The ultimate failure of the function of these autogenous kidney transplants, which have been transplanted successfully in the neck and have functioned a fairly long while, seems to be caused by hydronephrosis and infection, mainly incurred by mechanical insult in the new location.

Function of Homogenous Kidney Transplant.—Homogenous transplantation of the kidney was performed and studied by Ibuka in fourteen pairs of dogs. The function of the homotransplants in the neck was found to continue for a few days (an average of three days) after transplantation and to end by necrosis or softening of the transplant shortly after the cessation of its function. Chemical analysis of specimens of urine and functional tests on the transplanted kidney proved that the homotransplant functioned similarly to the autotransplant for a limited time, but the function soon changed and finally ceased.

Septic Kidney and Manic Depressive Insanity.—Kilbane reports on a case of calculus pyelonephritis in a patient suffering also with a serious mental disturbance. No other gross focus of infection was apparent, and while sepsis may not be accepted generally as a cause of manic depressive psychosis, it seemed reasonable to Kilbane to suppose that the kidney condition might be in this instance an important etiologic factor.

American Journal of Obstetrics and Gynecology, St. Louis

11: 287-438 (March) 1926

*Shock in Pregnant and Puerperal Woman. H. Bailey and W. B. Driscoll, New York.—p. 287.
Lipoma of Broad Ligament: Case. R. M. Rawls, New York.—p. 305.
*Use of Vaginal Stethoscope in Early Diagnosis of Pregnancy. F. H. Falls, Iowa City.—p. 309.
Dilation of Cervix Uteri by Means of Hydrostatic Balloon. E. L. Stone, Baltimore.—p. 314.
*Obstetric Heresies at Brooklyn Hospital. W. S. Smith, Brooklyn.—p. 324.
Incompatibility of Pregnancy and Fibroids of Uterus. F. C. Mosher, Kansas City, Mo.—p. 334.
Treatment of Fibroids of Uterus. E. A. Weiss, Pittsburgh.—p. 343.
Sedimentation Test in Pelvic Diseases of Female. H. Schmitz and H. Schmitz, Chicago.—p. 353.
Danger of Malformation of Fetus in Roentgen-Ray Treatment During Pregnancy. E. Ries, Chicago.—p. 361.
Contraction and Retraction Rings. C. White, London.—p. 364.

Torsion of Normal Fallopian Tube. H. L. Darner, Rochester, N. Y.—p. 368.
*Chancre of Cervix: Two Cases. R. S. Cron, Milwaukee.—p. 378.
Cystadenoma of Ovary: Three Cases. G. A. Mayer, New Orleans.—p. 383.
Analysis of Two Hundred and Fifty Prenatal Cases. J. S. Hebert, New Orleans.—p. 387.
*Full-Term Extra-Uterine Pregnancy: Three Cases. L. A. LeDoux, New Orleans.—p. 395.
Surgery, Radium and Roentgen Rays in Treatment of Carcinoma of Cervix. H. H. Bowing, Rochester, Minn.—p. 400.

Shock in Pregnant and Puerperal Women.—Bailey and Driscoll treat shock in the following manner: In patients exhibiting preliminary symptoms of shock and exhaustion, no operative procedure should be considered until the blood pressure is 100 or above, and the operation should be conducted under gas and oxygen anesthesia, three parts to one. One should be prepared to encounter shock in the delivery of patients. After acute hemorrhage a mechanical packer should immediately be inserted into the uterus and the uterine cavity packed with iodoform gauze. Usually it is well to pack the vagina also. In the presence of actual shock, the patient should be placed with the head and shoulders lower than the rest of the body and given warm tap water by rectum, 6 ounces (180 cc.) at a time. One thousand cubic centimeters of physiologic sodium chloride solution should be injected by hypodermoclysis beneath the breasts. If the shock is complete and the blood pressure is 80 or below, 300 cc. of gum-glucose solution should be injected slowly, at the rate of 3 or 4 cc. per minute. A universal donor should be brought to the hospital, and if the blood loss has been excessive, transfusion should be done.

Use of Vaginal Stethoscope in Early Diagnosis of Pregnancy.—To promote the hearing of the fetal heart tones before the eighteenth week, Falls devised a stethoscope that could be applied over the lower uterine segment through the vagina. This was accomplished by making a long-handled stethoscope, the bell of which could be introduced into the vagina, and the earpieces attached to the rubber tubes of an ordinary Shepherd stethoscope. He has been able to diagnose pregnancy at about the fourteenth to sixteenth week in twenty patients. Another use to which the vaginal stethoscope may be put is the auscultation of the lower uterine segment in patients with placenta praevia. At or near term there is audible a uterine souffle on both sides of the midline in the lateral fornices in normal cases. However, this normal uterine souffle was decidedly increased, noticeable even in the early months, in two patients with low implanted placenta.

Manual Intra-Uterine Rotation of Fetus.—Analysis of 2,000 obstetric cases made by Smith shows that manual intra-uterine rotation of the fetus in eighty-two selected cases, whereby the position was changed from occipitoposterior to occipito-anterior through an arc of 180 degrees, does no harm to the mother and only rarely jeopardizes the child. It is of great benefit to mother and child because of the shortening of labor and because of the diminution of trauma when the labor is terminated.

Chancre of Cervix.—Cron is of the opinion that the primary lesion of syphilis occurs frequently on the cervix, and that its apparent rarity is due to the fact that it is frequently overlooked and that it rapidly involutes.

Full Term Extra-Uterine Pregnancy.—LeDoux reports three cases. One was an ovarian pregnancy with dead fetus; one was an abdominal pregnancy. The child was born alive, weighing 7½ pounds (3.4 Kg.), and when last heard from was in good condition. The mother died of general peritonitis on the sixteenth day. The third case was also an abdominal pregnancy with death of both the mother and the fetus. During twenty years, 367 patients with extra-uterine pregnancy were admitted to the Charity Hospital. All were negro women; four were primiparas and seven were multiparas.

American Journal of Pathology, Boston

2: 99-191 (March) 1926

Autotransplantation and Homoiotransplantation of Thyroid Gland in Guinea-Pig. L. Loeb, St. Louis.—p. 99.
Autotransplantation and Homoiotransplantation of Cartilage in Guinea-Pig. L. Loeb, St. Louis.—p. 111.
Secondary Gliomatosis of Leptomeninges. D. Brannan, Pittsburgh.—p. 123.
*Case of Multiple Congenital Atresia of Ileum with Complete Separation of Segment of Bowel. I. H. Erb, Toronto.—p. 137.
Adenoma of Salivary Gland. C. B. Schutz, Philadelphia.—p. 153.
Cystitis Emphysematosa: Case in Dog. W. Hueper, Chicago.—p. 159.
Effect of Chloroform on Liver of Rabbits. E. de Zalka, Boston.—p. 167.
Foreign Particles as Cause of Blood Crises and Anemia. A. R. Elvidge, Montreal.—p. 189.

Multiple Atresia of Ileum.—A case of multiple atresia of the ileum with complete separation of a segment of bowel is reported by Erb. The absence of bile pigment below the upper atresia would indicate that the occlusions had occurred before the third or fourth month of intra-uterine life. The presence of a peritoneal adhesion suggests that the cause of these atresias was an early intra-uterine peritonitis.

American Journal of Physiology, Baltimore

1: 1-234 (March) 1926

Ventricular Electrogram of Frog's Heart Obtained Through Indirect Leads. S. De Boer, Amsterdam.—p. 1.
Method for Separating Air Breathed by Right and Left Lungs: Effect of Pulmonary Circulatory Changes on This Divided Breathing. E. D. Churchill and A. Agassiz, Cambridge, Mass.—p. 6.
*Effect of Feeding Thyroid Extract on Gastric Secretion. C. Truesdell, Chicago.—p. 20.
Calcium and Phosphorus Content of Strong and Weak Chicks from Hens With and Without Calcium Carbonate in Their Diet. G. D. Buckner, J. H. Martin and A. M. Peter, Lexington, Ky.—p. 28.
*Effects of Hot Baths on Respiration, Blood and Urine. III. E. M. Landis and others, Philadelphia.—p. 35.
*Regeneration of Pancreatic Tissue from Transplanted Pancreatic Duct in Dog. J. W. Shaw and E. O. Latimer, Chicago.—p. 49.
*Physiologic Action of Light. VII. Blood Calcium in Direct Irradiation of Blood. C. I. Reed and W. R. Tweedy, Chicago.—p. 54.
*Presence of Isomer of d-Glucose in Blood. M. B. Visscher, Minneapolis.—p. 59.
Thyroid Apparatus. XXIX. Rôle in Growth. F. S. Hammett, Philadelphia.—p. 69.
Gaseous Exchange Between Blood and Lumen of Stomach and Intestines. M. A. McIver, A. C. Redfield and E. B. Benedict, Boston.—p. 92.
Nature of Inhibition in Pennatula. A. R. Moore, Naples.—p. 112.
Permeability of Protoplasm to Ions. M. M. Brooks.—p. 116.
Tonus in Skeletal Muscles as Related to Sympathetic Nervous System. A. Kuntz and A. H. Kerper, St. Louis.—p. 121.
*Blood Counts in Vitamin A Deficiency Disease: Platelets. E. H. Falconer, Berkeley, Calif.—p. 145.
*Suprarenal Transplantation in Dog. I. Blodinger, H. E. Klebanoff and H. Laurens, New Haven, Conn.—p. 151.
Physiology of Gastric Secretion. X. Formation of Hydrochloric Acid by Gastric Mucosa. A. B. Dawson and A. C. Ivy, Chicago.—p. 158.
Heat Liberated by Beating Heart. V. C. D. Snyder, Baltimore.—p. 170.

Effect of Thyroid Extract on Gastric Secretion.—Truesdell asserts that thyroid extract caused a decrease in body weight, increase in rate of pulse, slight increase in body temperature, increased restlessness and slight diarrhea. A decrease in continuous secretion of gastric juice was observed in all cases. The gastric secretion following a meal was decreased during thyroid feeding, the rate and extent of the effect depending on the amount of the thyroid fed and the individual resistance.

Effect of Hot Baths.—The results of experimental observations are summarized by Landis et al. as follows: Hot baths cause a hyperpnea whose severity depends on the rate of rise of body temperature and also on the temperature level at which the rise takes place. Hyperpnea involves a change in both rate and depth. There is never a shadow respiration, except in the first few moments when there is strong skin stimulation and during the recovery period. The p_H change of blood to the alkaline side is apparently determined by the hyperpnea but is not proportional to it. There may take place an excretion of urine that is more alkaline than the blood, probably with varying efficiency in different individuals. Oxygen does not relieve tetany, but carbon dioxide gives definite improvement. On two occasions a change in the p_H of the blood toward the acid side was demonstrable within a few minutes of the onset of definite tetany, and the p_H change was accompanied by a fall in the carbon dioxide content of the blood. This might readily be explained if lactic acid was produced during tetany. No evidence was obtained of any definite p_H level at which tetany would occur, nor even of any critical degree of change of the p_H level.

Regeneration of Pancreatic Tissue from Transplanted Pancreatic Duct.—Shaw and Latimer aver that in completely or partially pancreatectomized dogs (the diabetes being con-

trolled by insulin) homografts of the pancreatic duct in the intestinal wall become vascularized and undergo varying degrees of differentiation or regeneration toward pancreas tissue. In experiments prolonged for two months or more regeneration of ductlets was always in evidence, with some indications of acini and islet formation. When the transplanted and regenerating duct does not establish connection with the lumen of the gut, secretion accumulates in the ducts. This factor probably retards the regeneration of pancreas tissue.

Effect of Light on Blood Calcium.—Reed and Tweedy show that direct irradiation of blood in vivo with a carbon arc-light does not produce any immediate change in blood calcium in dogs under ether anesthesia.

Glucose Isomer in Blood.—According to Visscher, present evidence does not support the conception that the sugar in blood is the unstable gamma glucose.

Blood Counts in Vitamin A Deficiency Disease.—Falconer is of the opinion that changes in the relative number of platelets, red cells and white cells in the blood of rats are not striking enough, or constant enough, to constitute a specific lesion of vitamin A deficiency in these animals.

Suprarenal Transplantation.—Suprarenal transplantation was performed by Blodinger et al. in fifteen dogs. Fourteen were autotransplants; one was a homotransplant. The sites of grafting were the kidney, spleen, omentum and rectus muscle. Second operations, consisting in the removal of the nontransplanted gland, were done at intervals ranging from five to eighty days after the first operation. Following the second operation, death occurred in every case with symptoms of suprarenal insufficiency. In thirteen cases death resulted in less than twenty-four hours after operation, the average being eighteen hours. The remaining two animals lived ninety-four and ninety-five hours, respectively, after the second operation, succumbing with typical symptoms. In one animal a two stage double suprarenalectomy with no transplantation was done, the dog dying eight hours following removal of the second gland. The kidney seemed to be the best site for transplantation, the graft apparently being kept alive longer there than in other sites used. The grafts in muscle were most rapidly destroyed and absorbed.

American Journal of Public Health, New York

16: 343-450 (April) 1926

Industrial Hygiene and Local Health Departments. H. L. Rockwood, Cleveland.—p. 343.
Detection of Amebae in Cases of Chronic Systemic Amebic Infection. H. Albert, Reno, Nev.—p. 352.
Public Health Aspects of Cross Connections and Dual Water Supplies. M. Nicoll, Jr., C. A. Holmquist and A. S. Bedell, Albany, N. Y.—p. 355.
Relation Between Ripe Sludge and Incoming Fresh Solids. W. Rudolfs, H. Heukelekian and P. J. A. Zeller, New Brunswick, N. J.—p. 365.
Education and Care of Undernourished Pretuberculous Children. H. DeLamater, St. Joseph, Mo.—p. 378.
Light and Health. E. R. Hayhurst, Columbus, Ohio.—p. 381.
Social Hygiene and Venereal Disease Control. C. E. Miner, St. Louis.—p. 386.
Standardization of Wassermann Test. R. Gilbert and V. Langworthy, Albany, N. Y.—p. 388.
*Prevalence of Carriers Among Recovered Typhoid Patients. C. N. Leach, S. A. Dehler and L. C. Havens, Montgomery, Ala.—p. 391.

Prevalence of Typhoid Carriers.—In the examination of 156 persons who had recovered from typhoid fever within from six months to two years, 10.3 per cent were found by Leach et al. to be typhoid carriers. These results show a percentage distinctly higher than reported by previous investigators in the United States.

Annals of Medical History, New York

8: 1-94 (March) 1926

Poetry and Physic. H. Rolleston, Cambridge, England.—p. 1.
Gleanings from Old Chinese Medicine. B. E. Read, Peking.—p. 16.
Some Humble Workers in Cause of Anatomy Hundred Years Ago. W. B. Howell, Montreal.—p. 20.
Pirate and Buccaneer Doctors. L. Eloesser, San Francisco.—p. 31.
Galen. A. Malloch, Montreal.—p. 61.
Prehistoric Surgical Bandage from Peru. R. L. Moodie, Chicago.—p. 69.
Excess Callus Following Fracture of Fore Foot in Cretaceous Dinosaur. R. L. Moodie, Chicago.—p. 73.
Spondylitis Deformans in Crocodile from Pleistocene of Cuba. R. L. Moodie, Chicago.—p. 78.

Archives of Surgery, Chicago

12: 789-948 (April) 1926

*Endothelial Myeloma, Ewing: Fifty-Four Cases. C. L. Connor, Boston.—p. 789.
*Experimental Hydronephrosis. IV. Ligation of Branch of Renal Artery. F. Hinman, San Francisco and A. B. Hepler, Seattle, Wash.—p. 830.
*Angio-Endothelioma of Bone. A. Kolodny, Iowa City.—p. 854.
*Bone Formation in Osteogenic Sarcoma. E. H. Eising, New York.—p. 867.
*Interstitial Growth in Growing Long Bones. S. L. Haas, San Francisco.—p. 887.
*Strangulated Hernia from Standpoint of Viability of Intestinal Contents. A. J. Beller and R. Colp, New York.—p. 901.
*Can Pleural Effusions Following Thoracotomies Be Prevented by Artificial Pneumothorax? E. Carlson and S. Bunnell, San Francisco.—p. 919.
Review of Urologic Surgery. A. J. Scholl and others, Los Angeles.—p. 928.

Endothelial Myeloma.—The fifty-four cases analyzed by Connor are considered important enough clinically and pathologically to report in full. The belief that these form an entity separable from osteogenic sarcoma is borne out by these characteristics: their almost constant location in the shafts of the long bones and in flat bones in which osteogenic sarcoma seldom occurs; their peculiar morphology, the type cell being easily distinguished from the osteoblast in most cases, and their susceptibility to radium and roentgen-ray treatment. The cells do not form an intercellular substance that will stain with the dyes used to differentiate collagen, bone and cartilage. At the same time, the cells are separable from those arising from the primitive hemocytoblast, and are considered, therefore, to be different from other various forms of myeloma which presumably arise from that cell. They resemble other myelomas by their predilection to metastasize to other bones. They occur in children mainly, and many of them are preceded by trauma and by signs of inflammation, apparently resulting from the trauma, this inflammatory reaction passing so imperceptibly into malignant disease that the two seem inextricably associated in the early stage. Histologically, they may be divided into angiomatous, reticular and diffuse tumors. Several important characteristics almost constantly associated with the tumor are the slow development with intermittent pain, swelling that may recede only to return and to become progressive, and the distressingly frequent confusion with chronic osteomyelitis clinically, roentgenologically and even, occasionally, histologically. As a final distinguishing point, the therapeutic radium or roentgen-ray test is advocated, this tumor, in contrast to osteogenic sarcoma, usually melting under the influence of these forces. Contrary to the opinion of Ewing and others, it is thought that endothelial myeloma arises as a solitary tumor, the multiple tumors appearing as actual metastases, and for this reason it is believed that amputation in the early stage is a form of treatment to be considered, though apparently radium has cured several cases. The prognosis, with a combination of surgery and irradiation, is not always death. Patients have lived for five years or longer, one sixteen years, after amputation, and many who have been treated by a combination of surgery, radium, roentgen-ray and sometimes Coley's toxins, are living over three years after the onset of the disease. The prognosis seems distinctly better than that of osteogenic sarcoma and other myelomas, and for this reason it is urged that these be considered special cases, in which, by energetic measures, a permanent cure may be possible.

Experimental Hydronephrosis.—This is the fourth paper in the series of reports made by Hinman and Hepler. The particular problem studied was the result of simultaneous ligation of the posterior branch of the renal artery and the ureter on the same side. The findings were: Because of the almost complete absence of arterial anastomosis, either intrarenal or extrarenal, ligation of the posterior branch of the renal artery causes infarction and throws out of function from one third to one half of the kidney. When this procedure is combined with total ureteral obstruction on the same side, there are produced in a remarkably short time enormous sacculations or diverticula of the infarcted area.

The effect is due to the lessened resistance of the degenerated parenchyma to urinary back pressure, and emphasizes, in an exaggerated manner, the significance of blood supply to hydronephrotic dilation. The absence of hydronephrosis in two specimens of this series, both of which showed a focal suppurative nephritis, confirms the belief in the importance of early infection with its resulting anuria in the production of primary atrophy when the ureter is completely obstructed.

Angio-Endothelioma of Bone.—Two cases are analyzed by Kolodny to show that angio-endothelioma of bone is a true pathologic entity, although it is exceedingly rare. He insists that, unless the diagnosis of endothelioma of bone is arrived at only after all the evidence is clear and conclusive, endotheliomas will continue to be the graveyard of those uncommon complex tumors of which the present day knowledge is extremely meager. Not by dodging and side-stepping the question of recognition of angio-endothelioma of the bone as an existing disease but by careful and intensive study of similar tumors and by elimination of all those which are of questionable origin will this be accomplished.

Bone Formation in Osteogenic Sarcoma.—The following hypothesis is put forward by Eising: Sarcoma in bone is a malignancy of the softer structures and connective tissues in bone, progressing in the matrix and along the pathway of the haversian canals and blood vessels. The new bone proliferation in osteogenic sarcoma is a secondary process and is the result of an attempt at the establishment of a natural barrier to the intrusion of the neoplastic process.

Interstitial Growth in Long Bones.—Haas asserts that interstitial proliferation of osseous tissue plays no part in the elongation of a growing bone, either in the mature bone or the young osteoid tissue on the epiphyseal cartilage plate. Length growth of bone is entirely dependent on the purposeful multiplication of the cartilage cells of the epiphyseal cartilage plate.

Strangulated Hernia and Viability of Intestine.—In two cases of strangulated hernia coming to operation, the contents of the sac were thought viable and were therefore replaced within the abdomen. Subsequent necropsies revealed gangrene of these intestinal loops with a plastic peritonitis. In order to determine the frequency of this untoward complication, Beller and Colp made a statistical review of 278 cases of strangulated hernia occurring among 4,139 cases of abdominal hernia, an incidence of 6.7 per cent. Apparently, the ability of nature to resurrect the viability of the average injured intestine has been exaggerated. In this series there were sixty-nine cases in which the compromised intestine had passed beyond the stage of congestion. Twenty-two of these were definitely gangrenous, and resection was performed. In forty-seven, after due deliberation, the contents were thought viable and were therefore reduced. Fourteen, or 30 per cent, of these patients subsequently died, the clinical picture many times resembling either intestinal obstruction, peritonitis or both. The authors assert that when viability of the intestine is questionable, resection need not be performed as a matter of routine because the involved bowel, adequately protected, may be left exposed in the wound for from six to eight hours before its fate is decided.

Does Artificial Pneumothorax Prevent Formation of Pleural Effusions?—From their experiments Carlson and Bunnell conclude that not enough pressure can be used in artificial pneumothorax either to prevent or to lessen the formation of pleural effusion, which so frequently jeopardizes results following thoracotomy. The old procedure of producing adhesions between the visceral and parietal pleura, which was long ago advocated by Sauerbruch and others, gives the better results. Aspiration of all the air following tight closure of the chest wall and early and repeated aspiration of any fluid formed is therefore indicated. The fixation of the visceral pleura to the thoracic wall by catgut sutures might assist in this process. Pneumothorax encourages the increase and spread of pleural infection. The danger from excess of pneumothorax in healthy normal persons with normal mediastinums is by no means a matter of minor importance.

Colorado Medicine, Denver

23: 109-146 (April) 1926

*Importance of Thyroid in Relation to Certain Varieties of Heart Disease. J. R. Arneill, Denver.—p. 111.
*Pathology of Case of Chronic Epidemic Encephalitis with Myoclonia. W. M. Greig, Denver.—p. 116.
*Method of Producing "Defatted" (Non-Acid Proof) Living Cultures of B. Tuberculosis. R. C. Whitman and K. L. Chambers, Boulder.—p. 118.
Colorado as Research Center in Tuberculosis. H. J. Corper, Denver.—p. 125.
Postmortem Examination: Index of Professional Efficiency. R. G. Mills, Denver.—p. 133.
Early Examination of Water Supply in Colorado. W. C. Mitchell, Denver.—p. 137.
Psychopathology: Sleep. L. H. Ziegler, Denver.—p. 141.

Thyroid Tumors and Heart Disease.—Experience has convinced Arneill that great numbers of toxic adenomas go unrecognized and that as a result many patients die a cardiovascular death unnecessarily. Early recognition and operation would have cured these patients. Every examination of a patient should include a careful inspection and palpation of the neck. Whenever possible, this should be supplemented by a fluoroscopic examination of the chest in order to determine the presence or absence of substernal or intrathoracic goiter. If this plan is followed as a routine, innumerable cases of thyroid disease will be detected which would otherwise go unrecognized. In addition to these examinations, basal metabolic rates should be determined whenever possible.

Pathology of Chronic Encephalitis.—The pathologic findings in a fatal case of chronic epidemic encephalitis are given by Greig. The disease was myoclonic in type, with twitching, marked clonic movements, and a few generalized convulsions, epileptiform in nature. The disease terminated after a course of about nine months with symptoms of a marked myelitis. Although the case was chronic in type, the microscopic examination disclosed little thickening of the vessel walls as an indication of past perivascular infiltration. The changes found compare with those generally found. In addition, a number of less common changes were noted. Beginning in about the middle of the thoracic cord there was seen an increase in the lipochrome element of the nerve cells, and with gradually ascending levels this increase became more marked until in the nuclei opposite the fourth ventricle the change assumed the character of collections of golden brown pigment granules. Some of the cells were filled almost to engorgement, while others had only a few scattered granules. In some cells the granules seemed to be collected in the form of a shell about a central hyaline mass with the cell nucleus pushed to one side. Not all of the nuclei were involved. A group of affected cells would be surrounded by unaffected groups. This change was found up to the lenticular nucleus, in which there was a gradual shading off to the normal amount of the lipochrome element. In the cord throughout the posterior columns and the posterior portion of the lateral columns, beginning in the upper midthoracic region, and culminating in number and size in the lower cervical region, were found a large number of small, round, almost black homogeneous bodies, somewhat resembling corpora amylacea. The evidences of myelitis were noted as low as the midthoracic region.

Tubercle Vaccine Made from Wax-Free Cultures.—On agar medium made from bone instead of meat infusion, the tubercle bacillus grows wax free (i. e., nonacid proof) in the first generation. Whitman and Chambers found that vaccines prepared by the customary method from such wax-free cultures of an old, greatly attenuated strain of human type bacillus afford practically complete protection to guinea-pigs against subsequent injection of overwhelming doses of virulent bovine bacilli. This protection lasts for about one year, and no doubt for a longer time, though in somewhat lower titer. The same vaccine seems to have considerable curative value in established tuberculosis.

Florida Medical Association Journal, Jacksonville

12: 250-283 (April) 1926

Gastric Syphilis. J. K. Simpson, Jacksonville.—p. 250.
Congenital Bilateral Anophthalmos and Polydactylism: Case. C. J. Heinberg, Pensacola.—p. 253.
Management of Epilepsy. W. S. Walsh, Gainesville.—p. 256.
Jaundice: Case. E. Jelks, Jacksonville.—p. 262.

Georgia Medical Association Journal, Atlanta

15: 125-172 (April) 1926

*Hexylresorcinol in Bacillus Proteus Pyelitis: Case. W. E. McCurry, Hartwell.—p. 125.
Treatment of Pyelitis. W. R. Holmes, Atlanta.—p. 128.
Surgery of Inguinal Hernia. W. F. Westmoreland, Atlanta.—p. 132.
Local Anesthesia: Report of One Hundred and Ninety Cases. G. Y. Massenburg, Macon.—p. 136.
History-Taking by General Practitioner. W. H. Clark, LaGrange.—p. 140.
Syphilis and General Practitioner. H. Levington, Savannah.—p. 143.
Surgery of Colon. W. E. Sistrunk, Rochester, Minn.—p. 147.
New and Rapid Method of Blood Transfusion. W. A. Norton, Savannah.—p. 155.

Hexylresorcinol in Proteus Pyelitis.—A patient with pyelitis due to *Bacillus proteus* was treated persistently by McCurry over a period of three and a half months by the methods in ordinary use, including bladder instillations, pelvic lavage, methenamine, alkalization and methylene blue, with only partial temporary relief. After four days of treatment by hexylresorcinol, the urine was sterile. Hexylresorcinol was continued for a total of twelve days, and the urine has remained sterile.

Journal of Bacteriology, Baltimore

11: 153-228 (March) 1926

Magnitude of Error Due to Ammonia and Its Salts in Van Slyke Amino-Nitrogen Procedure as Commonly Applied in Studies of Bacterial Metabolism. L. B. Parsons and W. S. Sturges, Omaha.—p. 165.
Possibilities of Conductivity Method as Applied as Studies of Bacterial Metabolism. L. B. Parsons and W. S. Sturges, Omaha.—p. 177.
Isolation of Clostridium Flabelliferum: Nitrogen Metabolism of Several Strains of C. Flabelliferum and C. Sporogenes. W. S. Sturges and L. B. Pasons, Omaha.—p. 189.
Studies in Microbic Heredity. V. Biogenetic Law of Haeckel and Origin of Heterogeneity Within Pure Lines of Bacteria. R. R. Mellon, New York.—p. 203.

Journal of Experimental Medicine, Baltimore

43: 289-440 (March) 1926

*Type of Phagocytic Cell: Relative Proportions in Human Bone Marrow and Spleen as Identified by Supravital Technic; Pernicious Anemia. C. A. Doan, Boston.—p. 289.
Effect of Thyroidectomy and Thymectomy in Experimental Syphilis of Rabbit. L. Pearce and C. M. Van Allen, New York.—p. 297.
Variations in Carbon Dioxide Requirements Among Bovine Strains of Bacillus Abortus. T. Smith, Princeton, N. J.—p. 317.
Effect of Vaccination Against Bovine Infectious Abortion. T. Smith and R. B. Little, Princeton, N. J.—p. 327.
Rapid Method for Isolation of Bacillus Abortus from Uterine Exudate and Diseased Placenta. J. B. Nelson, Princeton, N. J.—p. 331.
*Relation Between Tumor Susceptibility and Heredity. III. Spontaneous Tumors of Lung in Mice. C. J. Lynch, New York.—p. 339.
Effects of Insulin on Weight of Rabbits' Suprarenal Glands. H. S. Thatcher, Cleveland.—p. 357.
*Immunity Produced by Growth of Tetanus Bacilli in Digestive Tract. C. Tenbroeck and J. H. Bauer, Peking, China.—p. 361.
*Biology of Streptococcus. V. Antigenic Relationships Between Strains of Streptococcus from Scarlet Fever and Erysipelas. F. A. Stevens and A. R. Dochez, New York.—p. 379.
*Compensatory Hypertrophy of Suprarenal Cortex. E. M. MacKay and L. L. MacKay, San Francisco.—p. 395.
*Histogenesis of Autoplastic Thymus Transplantations. J. M. Gottesman and H. L. Jaffe, New York.—p. 403.
*Common Cold. I. Normal Bacterial Flora of Nose and Throat with Variations Occurring During Colds. G. S. Shibley, F. M. Hanger and A. R. Dochez, New York.—p. 415.
Frequency of Spontaneous Tumors in Domestic Fowl. M. Schneider, Storrs.—p. 433.

Phagocytic Cell in Bone Marrow in Pernicious Anemia.—The purpose of Doan's study was to determine the type of phagocytic cell that is found in increased numbers in the bone marrow in pernicious anemia. In general, there is a reversal of the normal in the ratio of clasmatocytes in the spleen to clasmatocytes in the bone marrow in pernicious anemia, with a marked tendency toward the phagocytosis of young, immature, nucleated red blood cells in the bone marrow. The peripheral blood picture suggests that these cells had never been in circulation. Doan's observations do not indicate that the spleen takes any directly active part in an increased destruction of blood in pernicious anemia.

Tumor Susceptibility and Heredity.—The facts presented by Lynch indicate that susceptibility to the development of tumors in the lung is an inherited character.

Immunity to Tetanus.—Additional data are presented by Tenbroeck and Bauer on the fact that carriers of tetanus spores are relatively immune to tetanus. They found that this immunity is specific for the serologic type of tetanus bacilli fed or injected, and that the antitoxin content of the serum does not indicate the degree of resistance to infection. As there is no relation between the amount of antitoxin in the blood and immunity to tetanus, the authors believe that other bodies, specific or type, must occur and make for the immunity observed.

Biology of Streptococcus.—Stevens and Dochez assert that erysipelas strains form a closely related group of hemolytic streptococci. Scarlatinal strains form an equally compact group. The two groups are related to pyogenic strains, but less closely than the strains within the groups. These groups are related to pyogenic strains, but less closely than they are related to each other.

Compensatory Hypertrophy of Suprarenal Cortex.—The MacKays were able to determine that removal of one suprarenal is followed by hypertrophy of the remaining gland. The increase in size of the whole gland is due entirely to hypertrophy of the cortex and amounted to approximately 91 per cent and was due in large part, if not entirely, to an increase in the size of the cells. No increase in the size of the medulla or its cells was found.

Autoplastic Thymus Transplantations.—Gottesman and Jaffe found that thymus gland of young rats autotransplants easily when inserted into the muscles of the abdominal wall. The regeneration is usually complete by the fourteenth day, when the new formed thymic lobules show differentiation into cortical and medullary zones.

Bacteriology of Common Cold.—The normal bacterial flora of the nose and throat of thirteen individuals has been studied by Shibley, Hanger and Dochez over periods ranging from five to nine months. No bacteria were found in early cold cultures to which a causative rôle could be assigned. In the course of colds, the basic flora of the nose was often scanty in the early stages. The throat showed reduction of prominence or alterations in predominance of the basic flora. Certain organisms were prominent in colds, usually as late or secondary invaders; these included *Staphylococcus aureus*, hemolytic streptococci, and *B. influenzae*. There was a striking increase in the incidence of hemolytic streptococci in throat infections.

Journal of Infectious Diseases, Chicago

38: 281-380 (April) 1926

Purification of Cultures of Spirochaeta Pallida by Chemical Methods. D. Wilkes-Weiss and C. Weiss, Philadelphia.—p. 281.
*Wassermann Reaction in Syphilis of Rabbits. R. D. Herrold, Chicago.—p. 290.
Modified Methyl Orange Indicator. A. J. Salle, Berkeley, Calif.—p. 293.
*Human Intestinal Carriers of Tetanus Spores in California. J. H. Bauer, Peking, and K. F. Meyer, San Francisco.—p. 295.
Changes in Bacterial Content of Stored Normal and Typhoid Feces. E. O. Jordan, Chicago.—p. 306.
Influence of Size of Inoculum on Incubation Period and Course of Rabbit Syphilis. G. E. Wakerlin, Madison, Wis.—p. 323.
Wassermann Reaction in Rabbit Syphilis. G. E. Wakerlin and P. H. Carroll, Madison, Wis.—p. 327.
*Döderlein's Vaginal Bacillus. A. F. Lash, Urbana, and B. Kaplan, Chicago.—p. 333.
Anthrax Immunity: Attenuation of Bacillus Anthracis by Means of Sodium Chloride and Other Chemicals. S. J. Schilling, Fayetteville, Ark.—p. 341.
Soluble Toxic Products of Enteritidisparatyphoid B Group: Their Action Especially in Relation to Blood Sugar. M. L. Menten, Pittsburgh.—p. 354.
*Organism of Actionomyces-Like Tonsillar Granules. R. Tunnicliff, Chicago.—p. 366.
Intracellular Proteins of Bacteria: Globulins. C. I. Nelson, Chicago.—p. 371.
Are There Immunologic Strains of Spirochaeta Pallida? J. A. Kolmer, D. Wilkes-Weiss and C. E. Richter, Philadelphia.—p. 378.

Wassermann Reaction in Experimental Syphilis.—Observations made by Herrold of the Wassermann reactions in experimental syphilis of rabbits indicate that the serologic response is not identical in every instance. There is also a vacillation in the reaction to some extent. These results in rabbits suggest that if repeated Wassermann tests were made in cases of suspected latent syphilis, many patients might be found to be syphilitic whose syphilis is now overlooked.

Human Intestinal Carriers of Tetanus Spores.—Four hundred and eighty-seven specimens of human feces from California have been examined by Bauer and Meyer and 24.6 per cent were found positive for tetanus spores. Of the 120 tetanus bacilli isolated from these specimens, 63.3 per cent were type 1; 7.5 per cent, type 2; 17.5 per cent, type 3; 2.5 per cent, type 4, and 5 per cent, type 5. Type 6 had not been found. In addition to these, three strains of tetanus bacilli have been found which were not agglutinated with any of six type serums tested. Type 7 serum was not available; therefore it was not determined whether these strains are type 7 or belong to a new serologic group heretofore not described.

Döderlein's Vaginal Bacillus.—The vaginal flora of ninety-eight pregnant women was examined by Lash and Kaplan by means of smears and cultures. Döderlein's bacillus occurred in forty-one instances, while isolated in only thirteen instances. Failure to cultivate in a greater number of cases was probably due to more rapid growth of the associated organisms. The morphology, cultural characteristics, biochemical, pathogenic properties and immunologic reactions of four strains were studied; three could be classified under the general group of lactobacillus, while one resembled a diphtheroid. Serologically, they are distinct, but there may be some relationship. The name *Lactobacillus vaginae* is proposed as a provisional name for the Döderlein strain B.

Organism of Actinomyces-Like Tonsillar Granules.—From an actinomyces-like tonsillar granule, a weakly gram-positive flexible motile anaerobic organism has been isolated by Tunnicliff that produces in pure culture rosettes and test tube brush-like forms similar to those seen in the original material.

Military Surgeon, Washington, D. C.

58: 225-336 (March) 1926

Surgical Impressions of World War. J. A. Blake.—p. 225.
Sewage Disposal Problems of Chicago. R. W. Putnam.—p. 243.
Standardization of Splints in A. E. F. IV. N. Allison.—p. 259.

58: 337-448 (April) 1926

Medical Service of Norwegian Army. H. Daae.—p. 337.
Sketches of Medical Service in France. B. K. Ashford.—p. 342.
Medical Esprit de Corps. A. W. Dunbar.—p. 364.
Venereal Disease Problem with American Forces in Germany. M. A. Reasoner.—p. 370.
*Fracture of Rami of Pubic Bones. L. L. Gardner.—p. 392.
Time Saving Procedures in Clinical Laboratory Technic. J. D. Reichard.—p. 396.
Physical Examination of Candidates for Admission to U. S. Military Academy. G. C. Dunham.—p. 399.
Duties of Station Surgeon. G. M. Ekwurzel.—p. 407.

Fracture of Rami of Pubic Bones.—As the result of being crushed between two coal cars, Gardner's patient sustained a fracture of the rami of both pubic bones and some insignificant skin abrasions; nevertheless, he died from a gas bacillus (Welch) infection six days later. The man had been healthy previously, and the postmortem did not disclose any rupture of any part of the intestine, although the sigmoid and rectum were stained with subperitoneal hemorrhage. All other organs were unaffected. Evidently the gas bacillus infection was autogenous, gaining access to the pelvic tissue from the intestine, and thence entering the blood stream as a terminal event.

Michigan State Medical Society Journal, Grand Rapids

25: 171-204 (April) 1926

Tuberculosis of Kidney. H. H. Young, Baltimore.—p. 171.
Function of Cerebral Hemispheres. I. M. Altshuler, Detroit.—p. 176.
Breast Tumors. H. W. Hewitt, Detroit.—p. 179.
Parinaud's Conjunctivitis. A. Dean, Grand Rapids.—p. 183.
Intumescent Rhinitis and Sinusitis. M. N. Frank, Detroit.—p. 185.
Focal Infection in Teeth Causing Transverse Myelitis. R. L. Glass, Ann Arbor.—p. 187.

New Orleans Medical and Surgical Journal

78: 651-715 (April) 1926

*Tonsillomycoses. A. Castellani, New Orleans.—p. 651.
Three Cases of Gas Bacillus Infection. A. A. Herold, Shreveport.—p. 661.
Diagnosis of Diseases of Pancreas. J. H. Musser, New Orleans.—p. 663.
Diagnosis and Treatment of Maxillary Sinusitis. H. W. Qualls, Memphis, Tenn.—p. 667.
Color Acuity: Importance in Diagnosis. M. E. Brown, New Orleans.—p. 671.
Mercurochrome in Surgery. S. W. Johnston, Vicksburg, Miss.—p. 676.
Evidences of Hypophyseal Dysfunction. I. I. Lemann, New Orleans.—p. 678.
Cutaneous Reactions as Aid to Diagnosis. A. W. Pigott, Oxford, Miss.—p. 682.
Choice of Anesthetic. L. S. Brown, Water Valley, Miss.—p. 691.
Insulin and Diabetes Mellitus. H. L. Rush, Meridian, Miss.—p. 693.
Significance of Early Diagnosis of Diverticulum of Esophagus. A. L. Levin, New Orleans.—p. 696.

Tonsillomycoses.—Castellani reports four cases of tonsillomoniliasis; two cases of tonsillo-oidiosis; one case of tonsillowilliasis, and three cases of tonsillohemisforosis. He asserts that affections of the tonsils due to fungi higher than bacteria (mycetes) are not very rare. He has seen cases in tropical and subtropical countries and also in Europe and in England. They may be clinically separated into two groups: chronic tonsillomycoses and acute tonsillomycoses. Acute tonsillomycoses may at times clinically simulate diphtheria, Plaut-Vincent's angina and follicular tonsillitis. The treatment consists in local applications of glycerin of borax, and, most efficacious, a phenol or a chlorine spray.

Northwest Medicine, Seattle

25: 167-220 (April) 1926

*Cholecystitis. E. S. Judd, Rochester, Minn.—p. 167.
Pathology and Diagnosis of Cholecystitis. A. A. Matthews, Spokane.—p. 171.
Diagnosis of Cholecystitis and Cholelithiasis. D. J. Lawson, Portland, Ore.—p. 178.
Gallbladder: Sodium Tetraiodophenolphthalein Test. W. J. Stater, Portland, Ore.—p. 183.
Factors of Safety in Gallbladder and Duct Surgery. P. Rockey, Portland, Ore.—p. 187.
*Cholecystitis and Diabetes. L. Ricen, Portland, Ore.—p. 191.
Surgery in Presence of Diabetes Mellitus. L. J. Palmer, Seattle.—p. 196.
Control of Scarlet Fever. G. F. Dick and G. H. Dick, Chicago.—p. 200.
*Production of Cerebral and Visceral Hemorrhage in Young Rat. I. A. Manville, J. L. Brodie and C. U. Moore, Portland, Ore.—p. 205.
Dermoid Tumor of Corneoconjunctiva: Case. A. B. Dykman, Portland, Ore.—p. 206.

Cholecystitis.—A study of 400 cases has convinced Judd that if a patient had a typical history of cholecystic disease, with characteristic colicky pain, he would be relieved of his symptoms if the gallbladder were removed, whether or not it showed recognizable disease. This study furthermore seemed to indicate that in cases of cholecystitis grade 1, in which the clinical manifestations were definite but disease unrecognizable at operation, cholecystectomy was followed by cure in a higher percentage than in the cases in which the disease of the gallbladder was graded 2, 3 or 4. The study furthermore showed that, if the patient's symptoms were of the chronic dyspeptic type or if the predominant features were soreness, tenderness, and aching in the side, the likelihood of cholecystectomy promoting cure was not great.

Cholecystitis and Diabetes.—Ricen has succeeded in demonstrating experimentally that lesions of the islands of Langerhans, resulting in diabetic symptoms, can be produced by hematogenous infections with *Streptococcus hemolyticus* and *B. typhosus*, if carried on for a sufficiently long period. He has never succeeded in lowering the sugar tolerance in animals with their gallbladders removed, which he thinks points to the importance of the infected gallbladder in injuring the pancreas, and particularly the islands of Langerhans, to such an extent as to produce diabetic symptoms. It is interesting to note that, whenever the injections produced febrile reaction, the micro-organisms injected were found in the gallbladder.

Experimental Visceral Hemorrhages.—Manville and his associates were able to produce experimentally in rats a hemorrhagic condition which seems to be analogous in many respects to that found in infants showing the hemorrhagic diathesis.

Public Health Journal, Toronto

17: 151-198 (April) 1926

Developments of Scarlet Fever Research. D. M. Fraser.—p. 151.
Results of Active Immunization Using Diphtheria Toxoid. A. M. Jeffrey.—p. 155.
Dick Test. L. M. Murray.—p. 157.
Whole Convalescent Blood and Antitoxin in Treatment of Scarlet Fever. B. Hannah.—p. 165.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anesthesia, Manchester

3: 165-212 (April) 1926

*Status of Ethylene as Anesthetic. C. L. Hewer.—p. 174.
Eliminating Static from Operating Rooms to Avoid Accidents with Anesthetics. E. K. McKesson.—p. 178.

Status of Ethylene as Anesthetic.—Hewer is of the opinion that ethylene must be given a definite place in anesthesia, and, in his opinion, it possesses advantages in certain cases which are not to be obtained by the employment of any other drug. The chief value of ethylene-oxygen anesthesia is for operations of medium severity lasting for a considerable time. In an average case, it permits of (*a*) a rapid and pleasant induction; (*b*) moderate relaxation without cyanosis, and (*c*) a quick recovery, with few, if any, after-effects. For short minor proceedings, ethylene offers no advantages over nitrous oxide and, indeed, is more likely to give rise to nausea or vomiting. At the other end of the scale, for extensive laparotomies, etc., in which absolute muscular relaxation and minimal respiratory movements are essential, ethylene cannot compare with the endotracheal nitrous oxide-oxygen-ether technic. A further use of ethylene-oxygen anesthesia is as an adjuvant to regional analgesia; e. g., in cases of gastrectomy performed under paravertebral or splanchnic block. It is undoubtedly preferable to pure nitrous oxide-oxygen in these combined methods, as respiration will be shallow and all cyanosis avoided without the disadvantage of any added ether.

British Journal of Dermatology and Syphilis, London

38: 143-184 (April) 1926

Lichen Nitidus. H. W. Barber.—p. 143.
Etiology and Treatment of Infantile Eczema. A. M. H. Gray.—p. 157.

British Medical Journal, London

1: 683-728 (April 17) 1926

*Etiology of Accidental Hemorrhage and Placental Infarction. F. J. Browne.—p. 683.
Theory and Practice in Relation to Treatment of Cancer with Lead. W. B. Bell.—p. 687.
Posture as Factor in Health and Disease. M. F. Forrester-Brown.—p. 690.
Symmetrical Urea Compounds as Chemotherapeutic Agents. J. E. R. McDonagh.—p. 693.
*Acute Suffocative Pulmonary Edema. A. Merrin, F. S. Coleman, F. B. Julian and C. L. Spackman.—p. 696.
Dislocation of Acromioclavicular Joint. J. Riddel.—p. 697.
Relationship of Herpes Zoster and Chickenpox: Two Cases. C. R. Wilson and J. H. Mitchener-Little.—p. 697.

Etiology of Accidental Hemorrhage and Placental Infarction.—The experiments reported on by Browne show that nephritis, acute or chronic, is an important predisposing factor in the production of accidental hemorrhage and placental infarction, and that toxemia is the exciting cause. It is believed that organisms only act by setting up an acute exacerbation of the nephritis, and that they do not lead directly to the hemorrhage, the latter being caused by endogenous poisons held up in the circulation by the acutely injured kidney.

Acute Suffocative Pulmonary Edema.—Merrin et al. report three cases of acute suffocative pulmonary edema in which treatment was with morphine. All three patients had no history of a previous attack, and all had valvular disease of the heart. Coleman has seen five cases that show that acute suffocative pulmonary edema occurs in a variety of chronic diseases—chronic regurgitation, asthma, and mediastinal neoplasm. Julian reports a case in which antimony tartrate acted very satisfactorily. In Spackman's case, bleeding gave speedy relief.

Irish Journal of Medical Science, Dublin

6: 153-200 (April) 1926

Protein Sensitization and Kindred Phenomena. E. T. Freeman.—p. 157.
Paroxysmal Tachycardia: Two Cases. L. Abrahamson.—p. 170.
Hyperemesis in Early Months of Pregnancy; Death Three Weeks After Termination of Pregnancy. G. Fitzgibbon.—p. 175.
Case of Double Vestibulotomy. H. Law and G. Bewley.—p. 181.

Journal of Obstetrics and Gynaecology of British Empire, Manchester

1: 1-182 (Spring) 1926

Rupture of Uterus During Pregnancy. J. Riddel.—p. 1.
Diet in Treatment of Preeclampsia. V. J. Harding and H. B. Van Wyck.—p. 17.
Gynecologic and Obstetric Clinic. W. B. Bell.—p. 33.
Imperforate Hymen. A. M. Fleming.—p. 46.
Endoscopy of Uterus: Hysteroscope. H. F. Seymour.—p. 52.
Tuberculosis of Fallopian Tubes. E. Maclean.—p. 56.
*Hyperemesis of Pregnancy. A. M. Drennan and C. S. Hicks.—p. 61.
Hyperemesis in Early Months of Pregnancy, Death Three Weeks After Termination of Pregnancy. G. FitzGibbon.—p. 70.
Puerperal Inversion of Uterus: Replacement by New Form of Aveling Repositor. W. W. King.—p. 76.
Cesarean Section for Labor Complicated with Prolapse of Cord. J. A. Kynock.—p. 79.
Intraperitoneal Hemorrhage and Intestinal Obstruction in Puerperium From (?) Separation of Old Adhesion to Uterus. R. W. Johnstone.—p. 81.
Case of Chorionepithelioma with Adenomyoma. A. A. Gammell.—p. 83.

Changes in Vomiting of Pregnancy.—A study made by Drennan and Hicks of four cases of pernicious vomiting of pregnancy shows the importance of estimating the percentage of ammonia nitrogen excretion in the urine, and the necessity for repeated examinations of this "ammonia coefficient." In the toxic form, the ammonia excretion remains high, but may show marked fluctuations, even in spite of clinical improvement. The percentage of ammonia excretion—above the normal—gives little indication of the gravity of the case. One of the cases studied terminated in death, and a necropsy was performed. The injury, in the toxic cases, affects the liver particularly, but the kidney may also suffer. The nature of the liver injury is a toxic necrosis affecting especially the central area of the lobule. The cause of the injury appears to be derived from the fetal products, as removal of these leads to recovery and a return to normal of the ammonia excretion. There may, however, be prolonged after-effects of toxemia. Too long a delay in removing the products of conception may lead to irreparable damage. The neurotic type of case shows no increase in ammonia excretion, or only a transient rise, which may be due to other factors than toxic injury to the liver.

Journal of Physiology, London

61: 1-150 (March 18) 1926

Effect of Stimulation of Vagi on Pyloric Region of Stomach. E. D. McCrea and B. A. McSwiney.—p. 28.
*Influence of Exercise on Inorganic Phosphates of Blood and Urine. R. E. Havard and G. A. Reay.—p. 35.
Impulses Produced by Sensory Nerve Endings. I. E. D. Adrian.—p. 49.
Elasticity of Skeletal Muscles. J. Lindhard and J. P. Möller.—p. 73.
Interpretation of Electromyogram of Striated Muscle During Contractions Set Up by Central Nervous Excitation. J. G. Dusser de Barenne and J. F. G. Brevée.—p. 81.
*Factors Concerned in Production of Pulmonary Edema. R. K. Lambert and H. Gremels.—p. 98.
In Vivo Permeability of Red Corpuscles of Rabbit. J. T. Irving and H. D. Kay.—p. 113.
Relation of Secretin Formation to Entrance of Acid Chyme into Small Intestine: Properties of Secretion. J. Mellanby and A. St. G. Huggett.—p. 122.
Nature and Significance of Vagus Escape. R. J. S. McDowall.—p. 131.
Action of Epinephrine and Ergotamine on Uterus of Rabbit. J. H. Gaddum.—p. 141.

Influence of Exercise on Blood and Urine Phosphates.—It is shown by Havard and Reay that after short vigorous unaccustomed exercise the inorganic phosphate in blood first rises a little above, then falls considerably below, the normal value in men. It is thought probable that the changes observed in blood phosphate are due mainly to changes in the lactacidogen content of the muscles. The changes observed in the urine seem to be due mainly to the fleeting acidosis caused by the lactic acid formed.

Production of Pulmonary Edema.—Lambert and Gremels assert that the principal cause of pulmonary edema is the injury to the capillary endothelium, and the greater permeability thereby produced. There is a gradual steady increase in the flow through the coronary vessels in the course of experiment—which may amount to five times the original rate. Since changes in the intima of the cardiac vessels are observed, similar to those described in the lungs, the authors

regard this increase as the response of the coronary vessels to the toxic effect exerted by the defibrinated blood. It is suggested that in certain cases of pulmonary edema, as observed clinically, similar effects may take place through toxic action of the blood on the pulmonary vessels. This factor may enter into the causation of cardiac edema.

Lancet, London

1: 795-844 (April 17) 1926

Development of Psychopathology: Place in Medicine. B. Hart.—p. 795.
*Blood Sugar Studies in Lethargic Encephalitis. P. K. McCowan, J. S. Harris and S. A. Mann.—p. 802.
*Steam Cautery. H. S. Souttar.—p. 805.
*Electrocardiographic Changes in Rheumatic Carditis. C. W. C. Bain and C. K. Hamilton.—p. 807.
Crossed Dystopia of Kidney. A. J. Compton.—p. 810.
*Lesion of Pons Varolii Occurring Under General Anesthesia. W. J. McCardie and H. W. Featherstone.—p. 810.

Blood Sugar Studies in Epidemic Encephalitis.—McCowan and his associates found on study of cases that in lethargic postencephalitis there is definite derangement of carbohydrate metabolism, as shown by the blood sugar curves. The levulose test does not support the contention that there is definite permanent hepatic insufficiency in lethargic postencephalitis. The majority of lethargic postencephalitis cases show a hyperglycemia following glucose ingestion, markedly sustained in 50 per cent of cases. The mental states of depression and stupor were associated with the most pronounced abnormalities of carbohydrate metabolism. No correlation could be found between the clinical pictures and the types of blood sugar curves obtained. Although no diagnostic value can be placed on blood sugar curves in lethargic postencephalitis, the fact that the only normal curve was obtained in a patient who had recovered from his psychosis suggests that prognostic significance may be attached to them. The hyperglycemia found in all the cases is quite in keeping with the suggestion that lethargic encephalitis is of the nature of a toxemia, usually acute in onset, but becoming chronic in nature.

Steam Cautery.—In the destruction of malignant tumors, Souttar makes use of a slow penetration of heat from a cautery maintained at a low temperature, and this is very conveniently done by a current of dry steam. Souttar uses an instrument of his own device founded on this principle. The cautery is described fully.

Electrocardiograms in Rheumatic Carditis.—Fifty children with evidence of active rheumatic carditis have been examined electrocardiographically by Bain and Hamilton. Lengthening of the auriculoventricular conduction time was present in two cases. Impaired intraventricular conduction was present in one case. Abnormalities in the T wave in leads 2 and 3 occurred in five cases. Extra-auricular systoles occurred in one case. Preponderance of one ventricle over the other was unusual; a right-sided preponderance appeared to have a bad prognosis.

Lesion of Pons Occurring Under General Anesthesia.—One of the cases reported by McCardie and Featherstone was a thrombosis of the basilar arteries during an operation for advanced carcinoma of the breast. The case was one of acute dissemination of a very widely spread cancer. Such patients are toxic, and stop breathing very easily. It is believed possible that the slowing of the circulation from exhaustion led to the clotting of blood, which initiated the chain of events leading to the fatal issue. The second case was an unusual one—temporary recovery of respiration and heart beat in a patient who apparently had died under anesthesia, with a fatal sequel due to associated pontine injury. The heart beat was restored by cardiac massage. Respiration returned after apnea, which had persisted for seventy-five minutes. Stoppage of the circulation in the brain for ten minutes is accepted as the explanation of the fatal issue, which is so frequently the early sequel in cases of restoration of the heart beat by cardiac massage.

1: 845-894 (April 24) 1926

*Neoplasms of Testicle. H. W. B. Cairns.—p. 845.
Endocarditis. III. T. Horder.—p. 850.
*Serum Treatment of Diphtheria. D. MacIntyre.—p. 855.
*Method of Cancer Research. H. Gilford.—p. 858.
*Tuberculous Adenitis Treated by Radium: Fifty Cases. P. Gosse.—p. 862.
*Intussusception: Case. D. S. Fairweather.—p. 863.
Skin Grafting in Acute Symblepharon. J. M. Ball.—p. 863.

Neoplasms of Testis.—Cairns reports on seventy-four patients treated by operation—fifty-five by orchidectomy, and nineteen by the radical operation. All recovered from the operation and were discharged from the hospital. The rate of recovery is: after orchidectomy, 33.3 per cent, and after the radical operation, 31.2 per cent. These figures are not quite comparable, for it so happens that relatively more spheroidal cell tumors were treated by orchidectomy, whereas in most of the cases in which the radical operation was done, the tumors were atypical teratomas, and of greater malignancy. It follows that the radical operation was set a harder test than the local operation. On the whole, therefore, Cairns is of the opinion that the results are slightly in favor of the radical operation.

Serum Treatment of Diphtheria.—MacIntyre urges early diagnosis and routine injection in all suspicious cases with antitoxin at the first visit. For the type of case that is virulent from the onset, he recommends the administration of large doses of serum, partly by intravenous and partly by intramuscular injection.

Method of Cancer Research.—Gilford describes a deductive method of cancer research, a so-called Cartesian method, advocated by Descartes some 300 years ago. As applied to the present problem, it is based on the proposition that cancer of man is essentially an intrinsic disease, a piece of the man himself, and that for its solution all the data required are at hand. According to this view, the genesis of cancer is an affair of human genetics.

Radium Therapy of Tuberculous Adenitis.—Of fifty cases of tuberculous adenitis treated by Gosse with radium, thirty-seven patients are cured; nine, improved; three, not improved, and one, dead. The glands to be treated, having been carefully located and palpated, are marked out on the overlying skin with a dermographic pencil. Over these localities "half-strength" plates, i. e., plates covered by 2.5 mg. radium element to each square centimeter surface, and covered by a sheet of Monel metal 0.3 mm. in thickness, are applied, and held in place by pieces of adhesive plaster.

Intussusception.—The unusual features in Fairweather's case are: (1) the age of the patient, 14 years; (2) the alleged absence of blood in the feces; (3) the site of the intussusception, 18 inches (46 cm.) of the ileum; (4) the almost uneventful recovery after such an extensive resection and on a patient who had suffered five days before operation.

Medical Journal of Australia, Sydney

1: 287-314 (March 13) 1926

Antenatal Supervision: 1,042 Cases. R. M. Allan.—p. 287.
Surgery and Surgeons in Edinburgh and Sydney Over Forty Years Ago. R. S. Skirving.—p. 290.
*Intermediate Hosts of Fasciola Hepatica. A. C. McKay.—p. 300.

Intermediate Host of Fasciola Hepatica.—McKay records the fact that it has now been proved that *Limnoea brazieri* is definitely an intermediate host of *Fasciola hepatica* in New South Wales. In *Limnoea brazieri*, he has found at least three types of cercaria. All three types are obviously fasciolid cercaria. The relationship of *Limnoea* to the liver infestation was proved experimentally on animals.

1: 315-342 (March 20) 1926

Insanity. W. A. T. Lind.—p. 315.
Rightsided Enteroptosis, Alias Chronic Appendicitis. H. C. R. Darling.—p. 324.
*Fulminating Purpura. H. H. Bullmore, E. M. Little and R. B. Lahz.—p. 329.

Fulminating Purpura.—Bullmore and his associates are convinced that in the case they report, there can be no doubt that the condition was due to hemolysis and that the organism was recovered from the blood both before and after death. The history of the illness would indicate that the malaise and headache were the symptoms of the onset of the toxemia, which terminated as a septicemia, the outstanding features being a fulminating purpura. It is surmised that the portal of entry was the tonsils.

Annales de l'Institut Pasteur, Paris

40: 169-251 (March) 1926

Tryparsamide in Treatment of Sleeping Sickness. Laigret.—p. 173.
Typhoid Fever in Guinea-Pigs. M. Gory and J. Dalsace.—p. 194.
*Toxin Formation in Frozen Brain Cortex. A. Speransky.—p. 213.
Culture Filtrates in Treatment of Suppurations. N. N. Bourdenko and N. L. Givago.—p. 232.
Coagulation of Yolk by Bacterial Diastase. E. Lagrange.—p. 242.

Production of Toxin by Tissue Freezing.—In Speransky's experiments, a circumscribed portion of the brain cortex in dogs was treated with liquid carbon dioxide through the intact dura. This induced an acute toxic encephalitis, with convulsions similar to epileptic seizures in man. The carbon dioxide was applied to various occipital and parietal parts of the brain cortex, except the motor centers; the phenomena were always the same. There were no convulsions if the frozen area of the cortex was removed immediately. Its removal after appearance of tonic convulsions did not arrest them. The frozen part of the cortex from dogs in an epileptic condition was implanted beneath the dura mater (beyond the motor zone) in two healthy dogs. They developed phenomena of epilepsy. There seems to be a substance produced in the frozen nerve tissue which has a toxic action on the nervous system—a neurotoxin, or rather an autoneurotoxin. Immunization against the autotoxin was realized by repeated, gradually increased, applications of the carbon dioxide; immunity was manifest in 15 per cent of the dogs surviving after an otherwise lethal application of the freezing procedure. Immunity was induced also with implants of the frozen brain tissue. Research is now under way on the prophylactic and therapeutic action of serums from immunized animals on different nervous manifestations in dogs. The freezing procedure was applied to the thyroid, testicle or salivary gland, and changes appeared in the symmetrical organ, suggesting the action of a specific toxin. It is possible that a toxin from freezing of cancer tissue might reduce the malignancy of the tumor, thus indirectly reenforcing the defensive forces.

Annales de Médecine, Paris

19: 81-240 (Feb.) 1926

*"The Rheumatic Disease." F. Bezançon et al.—p. 81.

Specific Character of Rheumatic Disease.—This entire issue is devoted by Besançon, Weil, Letulle and Guillaumin to a review of the various aspects and treatment of what they call *la maladie rheumatismale*. They insist that it is of infectious origin; induced by a specific virus, different from ordinary bacteria. Contagion may occur long before the appearance of an acute attack. This rheumatic disease does not present recurrences of acute attacks; it is a chronic disease, developing possibly in waves. The heart is the most important localization of the rheumatic infection. Heart disease is its constant manifestation; and this is slowly progressive, always chronic, with an adhesive tendency. Joint lesions, on the other hand, do not always accompany the rheumatic malady. Arthritis may be entirely lacking in young children; the heart disturbances then are the only symptoms of the disease. This may occur also in adults. Nodular myocarditis is the specific lesion of the rheumatic heart. They discuss the secondary heart block, arrhythmias and aortitis—which may all be of rheumatic origin. They report cases of rheumatic pleurisy, and describe the blood picture in acute articular rheumatism. While sodium salicylate is considered as the specific remedy of acute articular rheumatism, shock therapy may prove a powerful adjuvant.

Archives de l'Institut Pasteur de Tunis

14: 355-509 (Dec.) 1925. Partial Index

*Experimental Convalescents' Serum in Prevention of Typhus. C. Nicolle and E. Conseil.—p. 355.
*The Influencing of One Microbian Race or Species by Another. E. Burnet.—p. 384.
Misuse of Cannabis in Tunis; Cannabism. Bouquet.—p. 404.
Experimental Research on Hemolysis. H. Diacono.—p. 441.
Scientific Mission Across the Sahara Desert. P. Durand.—p. 469.

"Convalescents' Serum" from Animals in Prophylaxis of Typhus.—Nicolle and Conseil report that experimental typhus in the ass resembles that in the guinea-pig but the blood of the ass is less virulent during the febrile stage. In both these animals, however, the proteus bacteriologic test is negative but each produces an abundance of antibodies. It might be possible to enhance the antibody production in the ass serum by reducing the animal's resisting powers (venesection, superposed mild infection, or the like); repeating the inoculation did not seem to answer the purpose. Certain antimicrobic serums seem to owe their action to the infection induced by the primary inoculation, and not to repetition of the inoculations. The ass serum, in this case, is equivalent to a convalescent's serum, and they advocate its use in place of human convalescent serum in preventive work. They suggest that this principle of utilizing the serum of cured asses might be applied in prevention of measles.

The Influencing of One Microbian Race or Species by Another.—Burnet's research was mainly with the paramelitensis, and the way it influenced other microbes cultivated with it. Both the antigen properties and the agglutinability could thus be transformed by the interaction not only of bacteria of the same types but of different species. The modifications recall the phenomena of transmissible lysis, and the way in which bacteria resistant to the bacteriophage become modified in shape and antigen properties by its action. His research further sustains the idea of the variability of microbian types and of cells in general; the complexity of species and gradation of varieties from the standpoint of a given characteristic; also the heterogeneity of microbian cultures, and the orientation of the variations, which seem to occur always in a natural definite sense and to be irreversible.

Archives des Maladies de l'Appareil Digestif, Paris

16: 273-393 (March) 1926

The Respiratory Quotient. L. Dautrebande.—p. 273.
Correlation of Physiologic Factors of Digestion. C. Oddo et al.—p. 288.
Specific Follicular Lesions in Gastric Ulcer. P. P. Ravault and J. Creyssel.—p. 315.
*Insulin Treatment of Gastric Ulcer. R. Feissly.—p. 325.

Insulin Treatment of a Recurring Gastric Ulcer.—Daily injections of 15 units of insulin, for twelve days, induced healing of a recurring ulcer in the lesser curvature in a woman, aged 37. The cicatrization of the ulcer, Feissly says, was confirmed by roentgenograms. The treatment was based on two facts; namely, the increase of the alkali reserve in nondiabetic patients under the use of insulin, and the fact that experimental findings have shown that the more pronounced the acidity of the humors in dogs, the slower the healing of wounds. Balint's recent research also tends to prove a disturbance of the acid-base balance with ulcer. The technic used now by Feissly is as follows: 5, 10 and 15 units are given the first three days; then 30, 40 and 50 units, daily in two injections. The injections are made before meals, rich in carbohydrates. Malt extract is prescribed, besides, if there are signs of hypoglycemia. The duration of the course of treatment is from three to four weeks.

Archives de Médecine des Enfants, Paris

29: 129-184 (March) 1926

Growth in Rickets. G. Variot and V. Nazarie.—p. 129.
*Cholesteremia of Children. R. Baranski.—p. 139.
*Vaccine Therapy of Typhoid in Children. N. Spyropoulos.—p. 150.
Contracture of the Arm in Acute Anterior Poliomyelitis. L. Babonneix and L. Pollet.—p. 156.
Glaucoma in Children. J. Comby.—p. 161.

Cholesteremia in Children.—The cholesterol content of the blood was determined by Baranski in ninety-five children of different ages. Variations of the cholesterol in healthy infants appeared the same as in healthy adults. Tuberculosis or other infectious diseases induced in children the same changes of cholesterol content in the blood as in adults. In syphilitic children the cholesterol was lower than in syphilitic adults. The cholesteremia was abnormally low in children with dystrophic disturbances, also in acute alimentary toxicoses. It rose gradually as improvement progressed.

Vaccine Treatment of Typhoid in Children.—Spyropoulos applied intravenous injections of antityphoid vaccine in treatment of fifty children, aged from 2 to 15. In thirty-two cases a single injection brought about the gradual subsidence of fever and remarkable improvement, without any by-effects.

Convalescence was rapid in all. In four cases a second injection was given after two or four days. In two instances no effect was apparent. The results seemed to be better with an autogenous vaccine.

Bruxelles-Médical, Brussels

6: 654-688 (April 4) 1926

Surgery in Chronic Intestinal Stasis. Delangre.—p. 654.
Pathologic Anatomy of Epidemic Encephalitis. R. A. Ley.—p. 662.
*Syphilitic Reinfection and Tabes. Poirier.—p. 665.

Syphilitic Reinfection in Course of Tabes.—Poirier treated a chancre in a man with tabes, aged 44. The chancre was accompanied by swelling of glands and roseola. The Wassermann test elicited a positive reaction. This chancre had developed seventeen years after the first infection with syphilis and its primary chancre. He queries whether the first infection was with the neurotropic virus and the second with a dermotropic virus, or whether the first infection had never been cured.

Gynécologie et Obstétrique, Paris

13: 161-239 (March) 1926

Should Gynecologic Patients Be Told About Their Operation? J. Vanverts.—p. 161.
*Ovary Grafts in the Uterus. M. G. Serdukoff.—p. 164.
*Cause of Higher Metabolism in Pregnancy. Garipuy et al.—p. 172.
Absence of External Genital Organs. R. Choisy.—p. 177.
Genito-Abdominal Tuberculosis in Women. E. Toneff.—p. 205.

Intra-Uterine Transplantation of Ovary.—Serdukoff transplanted an ovary into the uterus in two sterile women at a laparotomy for salpingitis. Contrary to American and French operators, the ovary was implanted, not in the posterior wall of the uterus, but in the horn, on account of the intense vascularization in this region. He emphasizes that the abdominal surface of the ovary transplant should not be covered by peritoneum, since this may interfere with the regular rhythm of ovulation. Conservation of at least one ligament of the ovary, with intact vessels, is another important condition. The two women were reexamined six months later. All pains had disappeared completely, and menstruation was normal. The future will show if the results are complete, namely, if conception occurs.

Origin of Increase of Metabolism in Pregnancy.—Garipuy, Lassalle and Sendrail found clinical signs of exaggerated thyroid functioning only in one of sixteen pregnant women. They conclude that the higher basal metabolism in pregnancy is not connected with any thyroid reaction. Products eliminated by the fetus and placenta seem to stimulate the metabolism in the maternal organism, thus acting like hormones.

Lyon Médical

136: 675-706, 1925

Transient Weakening of the Heart in Tuberculosis. Dumas and Mollard.—p. 675.
*Multiple Anaphylaxis. L. Duvernay.—p. 678.

Multiple Anaphylaxis.—Duvernay's patient presented anaphylaxis which at first had been specific for milk and cows, but later the manifestations appeared from any toxic influence, sore throat, intestinal derangement, vaccine, strawberries or mosquito bite. The attacks were evidently of the colloidoclasis type, with vasodilatation, periods of pulmonary edema, asthma, urticaria, Quincke's edema and similar manifestations in joints—an actual acute articular rheumatism, the joints swelling and painful within an hour, the condition returning to normal in three hours. The only symptoms lacking from the clinical picture of anaphylaxis were migraine and eczema. The case further demonstrates the inhibiting action of an emotional shock, also of pregnancy, and especially of colchicin. Colchicin pills arrested the urticaria or reduced it, and Duvernay queries whether its efficacy in gout may not be explained by the assumption of an anaphylactic element in gout.

Revue Médicale de la Suisse Romande. Geneva

46: 197-260 (March 25) 1926

*Cystic Neuroglioma of the Cerebellum. C. Perret.—p. 197.
Visualization of Gallbladder. Roch and Katzenelbogen.—p. 215.
*Syphilis in the Third Generation. G. Cornaz.—p. 220.
The Bex-les-Bains Mineral Waters. R. F. Chollet.—p. 228.

Cystic Neuroglioma of the Cerebellum.—Perret treated a man, aged 32, with the diagnosis of a cystic tumor, probably located in the right cranial fossa. At that time the patient was blind and in a comatose condition. The skull was punctured at that point, and 20 cc. of a limpid fluid was released. This was followed by immediate relief, and rapid disappearance of all the symptoms. A week later the patient was able to walk and write letters. In six weeks the condition grew suddenly worse. The puncture was repeated and followed by trephining and draining. He recovered, and went back to his regular occupation. The recovery persisted for three years. Then a recurrence required a second trephining, with restoration to health for two years. A second recurrence did not yield to any measures, and the patient died in coma. At necropsy the tumor appeared to be a neuroglioma, with cystic degeneration. A fall on the back of the head, at the age of 7, which had induced two epileptiform seizures in childhood, and severe headache at puberty, may have caused formation of a neuroglioma after a long period of incubation.

Syphilis of the Third Generation.—The history of Cornaz' patient is as follows: Her father had contracted syphilis eighteen months before she was born. Twice she was treated for keratitis, and now presents corneal opacities, with evidences of dystrophic disturbance in bone and teeth from unmistakable congenital syphilis. Married at 29, she gave birth to two apparently healthy children within six years. Then came a third infant, stillborn. Necropsy disclosed congenital syphilis with spirochetes in the organs. Syphilis, Cornaz says, was positively excluded in the husband. The case shows how ineffectual is local treatment in congenital syphilis. Only intensive and prolonged general therapy should be employed, even if the Wassermann test is negative.

Schweizerische medizinische Wochenschrift, Basel

56: 289-312 (April 3) 1926

Laryngeal Tuberculosis. J. Stephani.—p. 289.
"Extraction of Cataract." A. Vogt.—p. 294.
"Diagnosis of Pituitary Tumors." A. Vogt.—p. 295.
*Hammock Treatment of Psychoses. M. Tramer and M. Esther.—p. 296.
Sterile Dressings. P. Jung.—p. 297.

Hammock Treatment of Psychoses.—Tramer and Esther recommend a closed hammock in treatment of excited psychopaths.

56: 313-336 (April 10) 1926

*Radiotherapy of Gynecologic Cancer. W. Fürst.—p. 313.
Influenza Epidemic, 1924-1925. E. Liebmann.—p. 321.
A Historical Double Monster. A. Reh.—p. 324.
"Autoserotherapy in Pleurisy." Chapuis.—p. 325. Reply. Pometta.—p. 326.

Radiotherapy of Gynecologic Cancer.—Fürst applies preparatory roentgen irradiation, then extirpates the tumor. If the tumor remains inoperable, he continues with radium or roentgen rays.

Pediatria, Naples

34: 337-392 (April) 1926

Meiostagmin Reaction in Leishmaniasis. M. Giuffrè.—p. 337.
*Blood Platelet Count in Infants. G. Roi.—p. 350.
*Achondroplasia. C. Giaume.—p. 359.
Amaurotic Family Idiocy. F. de Nicolò.—p. 370.

Blood Platelet Count in Infants.—Roi believes that he found occasionally a diminution in the number of blood platelets after meals in infants.

Achondroplasia.—Syphilis was probably responsible for the achondroplasia in Giaume's case.

Policlinico, Rome

33: 469-503 (April 5) 1926

Balantidium Dysentery. P. Alessandrini and A. Piattelli.—p. 469.
Pathology and Therapy of Cancer. L. Manara.—p. 474.
Iliac Thrombophlebitis. D. Taddei and G. Milul.—p. 477.
Radiologists and Practitioners. E. Pazzi.—p. 497.

33: 505-539 (April 12) 1926

Recurrence of Gallstone Around a Foreign Body. R. Pini and A. Catterina.—p. 505.
*Lesieur's Symptom in Typhoid. S. Trentini.—p. 511.
Organic Mycoses. C. Basile.—p. 515.

Lesieur's Symptom in Typhoid.—Trentini confirms the frequency of Lesieur's sign in typhoid; namely, a slight dulness

at the base of the right lung ("retrohepatic"). He attributes it to a pleuritic localization of the infection, if it appears early. When it appears later, it constitutes the true sign of upward displacement of the enlarged liver.

33: 177-224 (April 1) 1926. Medical Section

*Amebic Liver Abscess. T. Pontano.—p. 177.
Liver Atrophy and Multiple Sclerosis. G. Antonelli.—p. 202.

Amebic Liver Abscess.—In five of Pontano's twenty-five cases of amebic abscess of the liver, the Wassermann reaction was positive, although only one of them had syphilis.

Riforma Medica, Naples

42: 289-312 (March 29) 1926

Great Mistakes and Small Signs. G. Boeri.—p. 289.
Gonorrhea in Abnormal Sex Organs. G. del Vivo.—p. 295.
*Babinski Sign in Toxicoses. L. Pezzotti.—p. 297.

Babinski Sign in Toxicoses.—Pezzotti observed a positive Babinski phenomenon in a case of atropine poisoning.

42: 313-336 (April 5) 1926

Surgery of Tuberculous Peritonitis. M. Bufalini.—p. 313.
*Contralateral Warning Zone in Pneumothorax. A. Campani and E. Fiori. —p. 314.
Dental Prosthesis in Digestion Disturbances. C. D'Alise.—p. 324.
Malignant Tertian Malaria. A. Tarsitano.—p. 328.

Contralateral Warning Zone in Pneumothorax.—Campani and Fiori confirm the frequency of Campani's contralateral warning sign in artificial pneumothorax with adhesions, kept at high pressure. It consists in a pleuropulmonary congestion localized in the fifth to the seventh interspace in the axillary line. It indicates the danger of pleurisy on the pneumothorax side. The symptom is usually transitory, unless the insufflations are pushed. It is more frequent on the left side. They are inclined to explain it by some mechanical indirect compression rather than by a sympathetic reflex.

Rivista di Clinica Pediatrica, Florence

24: 145-216 (March 22) 1926

*Celiac Disease of Pancreatic Origin. L. Magni and E. Pirami.—p. 145.
Herpes Zoster and Chickenpox. F. Lo Presti-Seminerio.—p. 165.
Blood in Avitaminosis. S. Gandolfo.—p. 170.
Ultraviolet Rays in Spasmophilia. E. De Micheli.—p. 176.
Pathogenesis of Spasmophilia. E. De Micheli.—p. 184.

Celiac Disease of Pancreatic Origin.—Magni and Pirami report a case of intestinal infantilism. The chronic diarrhea, with steatorrhea, was quite pronounced. They attribute the disease to a disturbance of the pancreas.

24: 217-288 (April 10) 1926

*Tuberculous Orchiepididymitis. F. Allodi.—p. 217.
The Kottmann Test. D. Bottacin.—p. 227.
The Benzoin Test. P. Dotti.—p. 236.
*Liver Lesions and Tetany. D. Larini.—p. 249.

Tuberculous Orchiepididymitis.—Allodi deplores the somatic and mental sequels of surgical treatment of tuberculous orchiepididymitis, especially in children. Besides this, it seems to induce generalization of the disease. He gives every other day, or twice a week, subcutaneous iodine injections, with a rest for ten days after each two months of treatment. The formula is 1 Gm. of iodine; 2 Gm. of potassium iodide, and 100 Gm. of distilled water: Inject 1 cc. He reports good results in seven children from 2½ to 4 years of age.

Liver Lesions and Tetany.—Larini reports two cases of tetany in children with grave fatty degeneration of the liver, revealed by necropsy. He regards these lesions as the cause of the syndrome.

Boletin de la Soc. de Obstet. y Ginec., Buenos Aires

4: 575-617, 1925. Partial Index

Laparotomy for Bladder Stone on Hairpin. Ahumada.—p. 588.
Bougie Perforates Uterus and Migrates to the Spleen. F. F. Carranza and H. R. Martinez Leanes.—p. 590.
*Serologic Test for Cancer. N. Capizzano.—p. 597.

The Roffo Stain Test for Cancer.—Capizzano has confirmed in the field of gynecology Roffo's statements in regard to the differential importance of the color reaction when five drops of a 0.03 per cent solution of neutral red are added to 2 cc. of blood serum. In twenty-five women, normal or with non-malignant affections, or pregnant women, the tint of the fluid was constantly yellow. In twenty-four cases of cancer of the cervix or body of the uterus, the tint of the fluid changed to pink in 70 per cent. In the discussion that followed, Carranza stated that he had found the reaction positive in a case of a precancer leukoplakia of the uterus, and others confirmed that a previously positive reaction became negative in two months after removal of the cancer. Roffo has found that profusely secreting malignant tumors yield a larger percentage of positive reactions. With skin cancer, the proportion of positive responses was not over 30 per cent.

Gaceta Médica de Caracas

32: 337-352, 1925

*Protracted Fevers at Caracas. J. C. Rivas Morales.—p. 337.
*Idem. F. A. Risquez.—p. 339.
Epicondylalgia. Villegas Ruiz.—p. 341.
Medical Geography of State of Miranda. González and Quintero Arellano.—p. 342. C'cn.
Malta Fever in Zamora District. R. A. Blanco.—p. 350.

Priority in Differentiation of Paratyphoid Fever.—Rivas Morales relates that Jan. 2, 1896, Mosquera and Risquez called the attention of the local medical society at Caracas to series of cases of an anomalous typhoid fever, a pseudo-typhoid. They ascribed it to a virulent type of colon bacillus. Their report was published four months later in the organ of the society, and the data were examined by Gilbert at Paris and by Penny and Kinyoun at Washington. In November, 1896, Achard and Bensaude, Paris, called attention likewise to infections which they designated as paratyphoid, with bacilli intermediate between typhoid and colon bacilli. Their bibliography (1904) contained no mention of Mosquera or Risquez. Risquez adds that the alleged myth of "typho-malaria" was placed on a solid footing by his discovery of bacilli of the typhoid group and malaria parasites in the same microscopic field.

32: 353-368, 1925

Death from Inhibition. J. de D. Villegas Ruiz.—p. 353.
Chemical Reaction of Secretions and Excretions in Relation to the Food. J. B. Ascanio Rodriguez.—p. 356.
Prophylaxis of Leprosy. Idem.—p. 360.
Medical Geography of State of Bolivar. A. L. Briceño Rossi.—p. 361. C'td.
*Guacarapa Fever. F. R. García.—p. 368.

Guacarapa Fever.—García states that an endemic fever in the Guacarapa region of Venezuela bears a close resemblance to Rocky Mountain fever. It has a high mortality, usually proving fatal the seventh to the ninth day.

Patolojia Geral, Rio de Janeiro

11: 1-32 (Jan.) 1926

*The Kahn Test. M. Magalhães and H. Crespo de Castro.—p. 1.
Parasciatica and False Sciatica. A. Gonçalves Valerio.—p. 5.
Relations Between Development of the Brain and of the Suprarenals. J. Moreira da Fonseca.—p. 15.

The Kahn Serologic Test in Syphilis.—Magalhães and Crespo de Castro report new series of tests which confirm the findings of their previous series. In their 180 subjects, there were 21 in the primary stage of syphilis, 25 in the second and 19 in the third stage, with 51 in a latent phase, 31 with congenital syphilis, and 43 with a negative Wassermann reaction. All were tested with both the Wassermann and the Kahn technics, and the findings harmonized in 97.8 per cent. The discordance of 2.2 per cent was in favor of the Kahn test as being more sensitive. In only 0.5 per cent was the Wassermann positive with a negative Kahn. The intensity of the reactions coincided in 84.4 per cent; the Kahn findings were more pronounced in 15.6 per cent.

Revista de Cirugía, Buenos Aires

4: 241-288 (Dec.) 1925

*Treatment of Fractures with Aid of Metal. J. Valls.—p. 241.
*Improved Technic for Disarticulation of Hip Joint. V. Sanchis Perpiñá and R. Diaz Sarasola.—p. 253.
Delbet's Method in Fracture at the Ankle. Avelino Gutiérrez.—p. 258.
Surgery in Cholelithiasis. Alberto Gutiérrez.—p. 263.
Nephropexy by Gutiérrez Method. J. Hertz.—p. 275.
Arthroplasty of Elbow. Angel Gutiérrez.—p. 276.
False Diverticulum of Bladder. Bolo and Jürgens.—p. 281.
Fibrous Epulis. A. Buzzi.—p. 286.

Metal Bolts, Screws and Wire in Reconstruction of Bone After Fractures, and Remote Results.—Valls' roentgenograms sustain his assertion that the ultimate outcome could not be better than was actually realized in the nineteen patients recently reexamined from one to eleven years after the "metallic osteosynthesis." There had been no disturbances or by-effects from the metal implant in any instance. No special tolerance for either brass or steel was noted; both healed in place equally well. He has seen screws that had been removed from the greater trochanter after several years, and none of them had lost in weight; the screw had to be unscrewed to extract it.

Disarticulation of the Hip Joint.—Perpiñá and Sarasola claim superiority for their technic as it provides a fine stump while the incision avoids the large blood vessels, and they are easily ligated later. The limb in extension and slight abduction, the incision is carried at one stroke down through the capsule of the joint, the line running from 2 cm. below and inside the middle point of the inguinal groove to the tuberosity of the ischium. The only vessels severed are small ones. Then the head of the femur is twisted out of its socket, tearing the ligament. Rotating the thigh outward, increasing abduction, brings the femoral vessels into greater prominence, and a double ligature is applied. They prefer to ligate below the origin of the deep femoral, respecting the external circumflex. The almost right-angled cicatrix parallels the inguinal groove and extends on the thigh, not reaching the base of the stump. Six illustrations.

Archiv für Gynäkologie, Berlin

128: 1-390 (March 25) 1926

Follicles in the New-Born. H. Hartmann.—p. 1.
*Blood Sugar in Mother and Fetus. K. Hellmuth.—p. 11.
*Glycogen in Fetal Vagina. O. Gragert.—p. 43.
*Virulence of Vaginal Germs. N. C. Louros.—p. 48.
Leukorrhea from Uterus and Vagina. R. Schröder et al.—p. 94.
Interstitial Ovarian Gland. R. Mey.—p. 177.
Complications of Myomas. H. Schultheiss.—p. 210.
Ruge-Philipp Virulence Tests. F. Baake.—p. 230.
*Treatment of Syphilis in Pregnancy. Kraul and Bodnar.—p. 238.
*Rectal Cancer and Pregnancy. H. Katz and F. Kaspar.—p. 250.
Pigment Metabolism of Liver in Pregnancy. H. Eufinger and C. W. Bader.—p. 293.
Indicanemia in Pregnancy. H. Eufinger and C. W. Bader.—p. 309.
Movements of Tubes. F. v. Mikulicz-Radecki.—p. 318.
Cytology of Peritoneal Fluid. E. Vogt.—p. 363.
Treatment of Syphilis in Pregnancy. E. Klaften.—p. 371.

Blood Sugar in Mother and Fetus.—Hellmuth prefers the Folin-Wu method and sodium fluoride, which prevents glycolysis. The blood sugar is normal in pregnancy, and frequently becomes lower in the last two months. In eighteen of twenty-five labor cases, the blood sugar rose considerably (up to 228 mg. per hundred cubic centimeters). The blood sugar in the new-born child is always lower than in the mother, but it changes parallel with it.

Glycogen in Fetal Vagina.—Gragert found a large amount of glycogen in the squamous cells of the vagina in a fetus 16 cm. long.

Virulence of Vaginal Germs.—Louros explains the "blood virulence" of germs as detected by the Ruge-Philipp tests as only the maximum of virulence. His method (resistance to a 0.5 per cent solution of methylene blue) allows registration of lower grades of virulence—such as are sufficient for infection of the tissues, including the peritoneum. When he smeared such cultures on pieces of placenta, uterus, fat and peritoneum, and incubated, the germs grew into the tissue. Germs which were not resistant against methylene blue, remained on the surface. Avirulent germs produce much more acid from dextrose than the resistant and virulent strains. Therefore, the acidity of the vagina depends on the virulence of the germs. Hemolytic properties disappear in acid mediums. Virulent hemolytic germs do not produce enough acid, and therefore remain hemolytic. Avirulent hemolytic germs become anhemolytic. Virulent and resistant germs require higher temperatures for disinfection, and take stains only slowly.

Treatment of Syphilis in Pregnancy.—Kraul and Bodnar demonstrated the presence of arsenic and bismuth in the organs (including the brain), blood and amniotic fluid of fetuses whose mothers had been receiving antisyphilitic treatment. The placenta takes an active part in the transmission of the drugs. No stage of a pregnancy is too far advanced for the treatment, but if it is started early, hardly any of the children show signs of syphilis.

Rectal Cancer and Pregnancy.—Katz and Kaspar find a carcinoma of the rectum as a not entirely rare complication of pregnancy. In some cases, the development of the cancer seems to be in connection with the pregnancy, and there is recurrence of the tumor in the next pregnancy. This applies especially to women with a cancer heredity and with polyps of the rectum. The prognosis is comparatively good. It would be still better if the complaints of pregnant women as to rectal disturbances were always answered by examination of the rectum.

Archiv für klinische Chirurgie, Berlin

139: 667-787 (March 30) 1926

*Sympathectomy and Asthma. C. Rohde.—p. 667.
Surgery of the Pituitary. A. N. Bakulew.—p. 679.
*Tuberculosis of the Kidney. A. Westerborn.—p. 699.
Hemangioma of the Dura. E. Gold.—p. 729.
Lacing Closure of Wound. E. Gohrbandt.—p. 762.
Why Gastropexy Fails. E. Schneider.—p. 767.
Blood in Varicose Veins. Lasch and Billich.—p. 777.
Double Intestinal Occlusion. G. Alipow.—p. 782.
"Aberrant Endometrium." A. Lauche.—p. 785.

Sympathectomy and Asthma.—In a man with unbearable asthma, Rohde extirpated the whole of the left cervical sympathetic chain, down to the first thoracic ganglion. The patient died thirty-two hours later in a grave attack of asthma and pulmonary edema. The changes, however, were much more pronounced on the right side than on the left.

Tuberculosis of the Kidney.—Westerborn reports recovery after nephrectomy in 40 per cent of the men, and 73.2 per cent of the women (121 cases). He saw miliary tuberculosis developing shortly after catheterization in seven patients—mostly with strictures.

Archiv für Psychiatrie und Nervenkr., Berlin

76: 513-670 (Feb. 26) 1926. Partial Index

*Motor Function, Body Build and Character. M. Gurewitsch.—p. 521.
*Recent Religious Epidemic in Russia. H. Goldbladt.—p. 558.
Central Action of Cocain and Its Substitutes. Offermann.—p. 600.
Rotation of Body Around Longitudinal Axis in Cerebellar Disease. J. Gerstmann.—p. 635.

Motor Function, Body Build and Mental Characteristics.—Gurewitsch lists five different types of constitutional substandard motor functioning. They are usually accompanied by backward mental development, but not always. There seems, however, to be a connection between the motor function, the build and the mental condition. His research supplies the gap in the Kretschmer schizoid-pyknic-asthenic-athletic classification. The correlation between the constitutional build and the mental faculties is still more manifest when the motor functioning is included in the chain. There is a close connection between the handwriting and the constitution.

The Recent Religious Epidemic in Russia.—Goldbladt discusses the psychic epidemic which developed in Ukraine and spread over a large part of Russia in 1920-1923. This religious epidemic was based on the renovation of old religious paintings in churches and homes. They lost their aspect of age and shone clean and bright as new. The miracle in a village home attracted crowds of 50,000 people and imposing religious services were held. He thinks the foundation for the superstition of the miracles was the cleansing and brightening effect of certain unusual atmospheric conditions on the cupola of the large church at Kiev. The people got the idea that religious objects were being miraculously renovated, and the mass suggestion spread so they imagined the old pictures looked as if they were rejuvenated. Here and there some ikon was surreptitiously cleaned, but as a rule the whole was based on autosuggestion, with visions and blurring of consciousness; there were no hysteric motor phenomena. The "ikon renovation" epidemic was distinguished more by its wide spread than by the intensity of the pathologic psychic picture. Six of twelve persons examined, presenting extreme

cases of the delusion, were mentally substandard, hysterical women and girls. The larger the number of persons involved in such a religious epidemic, the greater the tendency for the mentally healthy to be drawn into the circle. He lays special stress on the numerous instances in which the people longed and prayed for the miracle to happen in their village or home, and their concentrated yearnings finally brought the miracle to pass before their eyes under the influence of religious faith, superstition, privations, and the emotional strain of the war and the famine, etc.

Beiträge zur klinischen Chirurgie, Berlin

135: 223-390, 1925

*The Roadway in the Stomach. K. H. Bauer.—p. 223.
Deep Pressure Sensation. W. Lehmann.—p. 253.
*Transplantation and Vital Storing. Lehmann and Tammann.—p. 259.
Study of Roentgen Dosimeters. H. Kalkbrenner and H. Küstner.—p. 303.
Painful Lipomas of Spermatic Cord. K. Werwath.—p. 325.
Diverticula of Sigmoid Flexure. G. H. Feist.—p. 338.
Buried Drain in Biliary Passages. G. H. Feist.—p. 360.
Hypnosis Induced in Animals. H. F. O. Haberland.—p. 370.
Waxy Degeneration of Muscles with Granuloma in Bone Marrow. R. Schmidt.—p. 378.

Extirpation of the Roadway in the Stomach.—Bauer's illustrations show the arrangement of the folds in the stomach which form a lengthwise track or roadway along which the food slides, and which seems to be the exclusive site for round ulcer formation. Ulcers elsewhere were of other nature in his experience. This lengthwise tract seems to differ histologically from the rest of the stomach. He presents data to prove that it is a rudimentary survival, the natural continuation of the esophagus deep into the stomach. The circulation corresponds to that of the esophagus, and defects do not heal here as elsewhere in the stomach. He has been experimenting on dogs with extirpation of this strip down through the stomach, and has applied the procedure in one clinical case, with apparently complete recovery. He reiterates in conclusion that whatever the primary factors may be, round gastric ulcer develops almost invariably in this tract, the *Magenstrasse*.

Transplantation After Blocking the Defensive Forces.—Lehmann and Tammann use the term *Vitalspeicherung* to express subcutaneous injection of a dye (trypan blue) to block the reticulo-endothelial system. When this was done preliminary to transplantation of a skin flap from another animal of the same species (mouse), the transplant healed in place, while this never occurred without the preliminary vital storage treatment. Twenty-six colored plates show the details of the research, the findings sustaining, they say, the assumption that the blocking of the reticulo-endothelial system prevents the natural reaction to cast off the foreign body. The organism accepts it passively, as it were, and proceeds to supply it with blood, etc., as if it were part of the original organism. This theory was confirmed by the successful healing of a second flap after blocking the reticulo-endothelial apparatus, when a previous transplant, while this apparatus was functioning normally, had been speedily cast off.

Deutsche medizinische Wochenschrift, Berlin

52: 517-556 (March 26) 1926

Occultism and Criminality. E. Meyer.—p. 517.
*Vulvovaginitis in Children. E. Vogt.—p. 520.
Arthropathies and Sedimentation. E. Einstoss and T. Hirsch.—p. 524.
*Treatment of Partial Deafness. E. Wodak.—p. 526.
Wryneck. Böhm.—p. 529.
*Møllgaard's Serum. Opitz and Kotzulla.—p. 531.
*Facial Paralysis in Otitis. P. Manasse.—p. 532.
*Prognosis of Scrofula. O. Connerth.—p. 533.
Concentrated Insulin. Kölle.—p. 536.
Treatment of Furunculosis. W. Rosenau.—p. 537.
Campaign Against Tuberculosis. P. Hallmann.—p. 537.
Medical Writing. W. Heydorn.—p. 539.
Autohemotherapy. L. Hirsch.—p. 551.

Vulvovaginitis in Children.—Vogt points out that the urethra, cervix and rectum are much more frequently affected in the vulvovaginitis of little girls than has hitherto been assumed. The long duration of the disease is explained by this. The spreading of gonococci upward through the uterus and tubes is not infrequent. This occurs sometimes at the onset of menstruation, after a long period of quiet. Potentia coeundi might suffer by concretion of the labia and stenosis of the vagina. Sterility is quite frequent.

Treatment of Partial Deafness.—Wodak has been trying large doses of arsenic in 100 patients suffering from otosclerosis and other affections impairing the hearing more or less. He gave daily two pills, each containing 5 mg. of sodium arsenate, and in grave cases, three or four pills. The total amount given was about 300 mg. An interval of three or four months followed. He had fair results in two-thirds of his otosclerosis patients and in a similar proportion of other diseases.

Møllgaard's Serum.—Opitz and Kotzulla found no experimental evidence of antitoxic properties of Møllgaard's serum. Its action did not differ from that of normal beef serum. They claim that this control was omitted by Møllgaard.

Facial Paralysis in Otitis.—Manasse does not consider a facial paralysis occurring in the course of acute inflammation of the middle ear as indication for trephining.

Prognosis of Scrofula.—Connerth's statistics indicate that only a comparatively small percentage of those who have had scrofula are later affected by grave pulmonary tuberculosis.

Deutsche Zeitschrift für Chirurgie, Leipzig

195: 1-144 (March) 1926

Surgery of Cholelithiasis. H. Haberer.—p. 1.
*Repair After Irrational Biliary Surgery. P. Walzel.—p. 26.
Ideal Cholecystectomy. J. Doberer.—p. 38.
Treatment of Intra-Articular Fractures. A. Wittek.—p. 42.
Treatment of Subcutaneous Fractures. A. Eiselsberg.—p. 52.
Insulin in Surgery. V. Orator.—p. 57.
Autohemotherapy in Sepsis. W. Linhart.—p. 69.
Volvulus of the Stomach. H. Haberer.—p. 80.
Treatment of Avulsion of the Diaphragm. V. Orator.—p. 89.
Treatment of Empyema. E. Bouvier.—p. 92.
Instruments for Gastro-Intestinal Surgery. O. Maier.—p. 95.
*Tests for Blood Transfusion. F. Metzler.—p. 99.
Operation for Double Cleft Palate and Harelip. H. Pichler.—p. 104.
Exogastric Granulomatous Carcinoma. Knoflach and Eichelter.—p. 107.
Sarcomatosis of the Skin. J. P. Haberern and L. Karoliny.—p. 119.
Acidosis in Surgery. J. Loessl.—p. 128.
"Water-Bed." Beck.—p. 137. Reply. Pfab.—p. 138.

Repair After Irrational Biliary Surgery.—Walzel deals with the correction of mistakes made by surgeons in the treatment of disease of the gallbladder and biliary passages. A cicatricial stenosis of the common bile duct has a very poor prognosis. Adhesions, overlooked gallstones and neurogenous stasis are better suitable for relaparotomy.

Tests for Blood Transfusion.—Metzler's patient, with grave anemia due to a gastric ulcer, was given a transfusion with 500 cc. of blood. Both the patient and the donor belonged to group O (I Jansky). In spite of this, the patient became unconscious during the transfusion. Another transfusion, made twelve days later, killed the patient.

Klinische Wochenschrift, Berlin

5: 585-632 (April 2) 1926

Angina Pectoris. E. Magnus-Alsleben.—p. 585.
*"Organic" Iron Preparations. W. Heubner.—p. 588.
*Coefficient of Cortex. C. v. Economo.—p. 593.
*Psychiatry and Habitus. K. Kolle.—p. 595.
*Serology of a Pneumococcus. E. Berger and B. Engelmann.—p. 599.
Starvation and Alkali Reserve. F. Walinski.—p. 600.
Static Insufficiency of the Skeleton. H. Maass.—p. 602.
"Vitamins of Human Milk." A. Frank.—p. 605.
"Treatment of Multiple Sclerosis." W. Sauer.—p. 606.
*Peptidases in Fever. H. Pfeiffer and F. Strodenath.—p. 606.
Irritation in Seizure. E. A. Spiegel and T. Falkiewicz.—p. 606.
Diaphragmatic Hernia. L. Reich.—p. 607.
Infectious Skin Epitheliomas. H. Martenstein.—p. 608. Cen.
Occupational Poisonings. H. Zangger.—p. 612.
*Meningeal Affections. J. Schlesinger.—p. 631.
*Treatment of Lancinating Pains. O. Stein.—p. 631.

"Organic" Iron Preparations.—Heubner finds that it is immaterial what admixture is added to the iron oxide in its use as an "organic" preparation of iron. The saccharate is cheap, and makes combinations with proteins superfluous. The question of bivalent or trivalent iron is more important. The resorption of the former is better than of the colloidal preparations.

The Cortex Coefficient.—Economo estimates the number of cells in the human cerebral cortex at 14 billions. Eight

billions of them are large cells and six, smaller ones. The total weight of these cells is only about 21.5 Gm. and their volume 20.78 cc. The weight of the cortex is 581.3 Gm., the volume, 560 cc. The rest of the cortex consists of the gray matter. The ratio of the weight of the gray matter to the weight of the cells in man is 26. He believes that it is a good index of the organization of the cortex. Lower animals have a lower index (larger proportion of cells).

Psychiatry and Habitus.—Kolle is quite skeptical with regard to Kretschmer's somatic types. The pyknic habitus in cyclic psychoses is due chiefly to the fact that about four fifths of these patients are older, and the habitus simply corresponds to the age. Subjective ratings play an enormous rôle. Two investigators taught in the same school find a divergent percentage of types in a material of the same origin.

Serology of a Pneumococcus.—Berger and Engelmann changed a pneumococcus of group III into a strain of group II.

Peptidases in Fever.—Pfeiffer and Standenath test the degree of splitting of glycyltryptophan by the serum. A fever puncture in a rabbit did not increase the titer. Administration of tetrahydro-beta-naphthylamine and injections of a typhoid vaccine killed by heat gave also negative results. Addition of phenol as well as destruction of the cells caused by other means—such as vaccinia and colon infections—increased the titer.

Meningeal Affections.—Schlesinger observed, as one of the first signs of meningitis in infants and small children, a dissociation between the movements of the head and of the eyes. The children turn the head first, and the eyes follow only slowly.

Treatment of Lancinating Pains.—Stein had success in twenty-eight of thirty-two cases of lancinating pains in tabes with intravenous injections of 10 cc. of a 40 per cent solution of methenamine. Irritation of the bladder was noted in some of the patients thus treated. It disappeared after administration of 1 mg. of atropine sulphate.

Medizinische Klinik, Berlin

22: 515-558 (April 1) 1926

Brain Surgery. F. Krause.—p. 515.
Fifty Years of Goiter Surgery. C. Garrè.—p. 518.
Fifty Years of Abdominal Surgery. H. Kümmell.—p. 520.
Surgery of the Lungs. A. W. Meyer.—p. 525.
*Paralysis of the Intestine. P. Rosenstein and H. Köhler.—p. 530.
Aseptic Cystoscopy. V. Blum.—p. 533.
*Endocarditis Lenta. F. Heilborn.—p. 535.
Basal Gangrene of the Appendix. F. Orthner.—p. 537.
Research on Viruses. R. Kraus.—p. 538.
Skull Injury and Brain Tumor. A. Wilde.—p. 540.
"Epituberculous" Infiltrate. W. Schmitt.—p. 543.
French Neurology. M. Seige.—p. 546.
Legalized Abortion in Russia. A. Geuss.—p. 555.

Paralysis of the Intestine Treated with Injections in the Celiac Ganglion.—Rosenstein obtained movements of the intestines in cases of complete paralysis of the bowel (from peritonitis) by injecting 3 mg. of nicotine, in 30 cc. of water, around the celiac ganglion. He used Kappis' paravertebral technic. The injection does not necessarily cure the patient, who may die from sepsis. Köhler reports on experiments on animals. Nicotine was the only drug which proved effectual and harmless.

Endocarditis Lenta.—Heilborn finds that splenectomy may help in cases of recurring ulcerative endocarditis, if the clinical symptoms point to a marked participation of the spleen.

Münchener medizinische Wochenschrift, Munich

73: 555-594 (April 2) 1926

A Physician's Thoughts on Medicine. A. Bier.—p. 555.
*Laryngoplasty. V. Schmieden.—p. 558.
Acetylene Anesthesia. E. Seifert.—p. 559.
Parasternal Protuberance. F. Hamburger.—p. 561.
Venereal Granuloma. M. N. Thierfelder and M. Thierfelder-Thillot.—p. 561.
*Treatment of Furuncles. K. Junkermann.—p. 563.
Bronchial Carcinoma. W. Nonnenbruch.—p. 564.
Knock-Knees. K. Port.—p. 565.
Growth and Goiters. Pflüger.—p. 566.
Treatment of Paraphimosis. Witzenhausen.—p. 568.
Diffuse Peritonitis. H. Heufelder.—p. 568.
Treatment of Wounds. Berkenbusch.—p. 570.
"Status Asthenicus Adiposus." H. Hueck.—p. 572.
Treatment of Abortion. H. Sellheim.—p. 573. C'cn.
Overburdening by the School. v. Bruns.—p. 577.

Laryngoplasty.—Schmieden recommends Payr's plastic operation on the larynx in cases of paralysis of the inferior laryngeal nerve.

Treatment of Furuncles.—Junkermann regards surgery in carbuncles and furuncles (except in simple fluctuation) as criminal. He applies mercurial ointment in a thick layer on a piece of linen, or, if stomatitis or nephritis sets in, 40 per cent sulphonated bitumen, N. F., in hydrous wool fat.

73: 595-638 (April 9) 1926

The Respiration Center and Morphine. R. Gottlieb.—p. 595.
*Indigestion. W. Weitz and W. Vollers.—p. 598.
*Bronchial Asthma. W. Storm van Leeuwen.—p. 599.
Leukocyte Counts. O. Prym.—p. 603.
Blood Groups in Cologne. E. Wiechmann and H. Paal.—p. 606.
*Diagnostic Culture in Tuberculosis. J. Hohn.—p. 609.
Leptospirilloses. W. H. Hoffmann.—p. 611.
Starting Point of Systole. F. Schellong.—p. 614.
Iodized Oil in Pyelography. A. Sigl.—p. 617.
Technic of Percussion. J. Schwarzmann.—p. 618.
Kidney Diseases. C. R. Schlayer.—p. 622.
The "Attending Physician" and Occupational Diseases. L. Reinheimer.—p. 624.

Slight Stomach Disturbances.—Weitz and Vollers found more pronounced disturbance of the gastric motor function than of the secretion of the stomach in indigestion.

Bronchial Asthma.—Van Leeuwen divides asthma-inducing substances into two groups: the A allergens contained in the air, and the B, the others, occurring in houses. He had excellent results when keeping the patients of the group B at least over night in small chambers with sterilized mattresses, and the air supplied through a tube ending about 10 meters above the roof of the building. With the A type of asthma, he chills the air. The condensed vapor contains most of the A allergens. After this, he heats the air and supplies it to the patients.

Diagnostic Culture in Tuberculosis.—Hohn concludes that the problem of the diagnostic cultivation of tubercle bacilli is solved by the Löwenstein-Sumiyoshi method.

Wiener klinische Wochenschrift, Vienna

39: 377-408 (April 1) 1926

*Chagas' Disease and Goiter. R. Kraus.—p. 378.
"Iodine Exophthalmic Goiter." A. Schimak.—p. 382.
*Drugs with Hidden Iodine. L. Kofler.—p. 386.
Chromodiagnosis of the Liver Plus Cholecystography. F. Faltitschek and H. Krasso.—p. 387.
"Surgically Incurable" Ulcer. F. Mandl.—p. 391.
Roentgen Study of Uterus and Tubes. R. Joachimovits.—p. 393.
Experimental Pathology. A. Fraenkel.—p. 394.
Treatment of Hay Fever. F. Vollbracht.—p. 395.
Lupus Erythematodes. S. Ehrmann. Supplement.—p. 1-24.

Chagas' Disease and Goiter.—Kraus finds that it has not been proven that the South American trypanosomiasis causes the goiter and myxedema. There are many regions in South America with endemic goiter (75 per cent; 30 per cent are cretins), and although the triatomas found there contain trypanosomas, no Chagas' disease is observed there.

Drugs with Hidden Iodine.—Kofler found iodine in several preparations sold as "pure nonpoisonous vegetable compounds."

39: 409-436 (April 8) 1926

The Mucosa in Dermatoses. S. R. Brünauer.—p. 409. C'td.
Pathology of Therapeutic Malaria. R. Adelheim.—p. 412.
*Iodine in Vasomotor Rhinitis. H. Sternberg and M. Sugar.—p. 416.
*Intracavernous Injections. H. Adler.—p. 417.
The Vienna Manual Method. B. Beer.—p. 418.
Fermentation Tube. A. Luger and N. Kovács.—p. 420.
Salts of Acetylsalicylic Acid. O. Nemetz.—p. 422.
"Diabetic Glycosuria." L. Dünner and M. Mecklenburg.—p. 422.
Reply. H. Schur and F. Kornfeld.—p. 423.
Sanatoriums and Tuberculosis. E. Ladeck.—p. 423.
Surgical Indications for Gastric and Duodenal Ulcers. J. Schnitzler. Supplement.—pp. 1-24.

Iodine in Vasomotor Rhinitis.—Sternberg and Sugar report good results with from two to four subcutaneous injections of 1 cc. of a 5 per cent solution of sodium iodide. Only the solutions containing traces of free iodine were active.

Intracavernous Injections.—Adler injects dextrose, arsphenamine or calcium chloride into the cavernous spaces of the lower turbinal when the skin veins are not palpable.

Zeitschrift für Krebsforschung, Berlin

23: 161-240 (April 10) 1926

*Experimental Uterine Cancroid. Teutschlaender.—p. 161.
*Bacterium Tumefaciens. Teutschlaender and Kronenberger.—p. 177.
*Mitoses in Tar Cancer. Teutschlaender and H. Schuster.—p. 183.
The Mouse Molluscoid Tumor. Teutschlaender.—p. 209.
*Metastasis of Cancer. H. Metzger.—p. 229.

Experimental Uterine Cancroid.—Teutschlaender induced cancroid of the uterus in a rat by intravaginal injections of tar.

Bacterium Tumefaciens.—Teutschlaender and Kronenberger failed in their attempts to induce cancer by injection of tumefaciens cultures with addition of various irritating substances.

Mitoses in Tar Cancer.—Teutschlaender and Schuster found no atypical mitoses in the first three stages of formation of tar cancer. Only in one part of the fully developed cancer could abnormal mitoses be detected.

Metastasis of Cancer.—Metzger describes a diffuse lymphatic infiltration of the uterus by a metastasis from a carcinoma of the breast. Only an intramural myoma remained free—probably because its lymphatic vessels were only little developed.

Zeitschrift für Tuberkulose, Leipzig

44: 353-432 (March) 1926

Sanocrysin Treatment. W. Zinn.—p. 353.
Cytology of the Sputum. R. Engelsmann.—p. 373.
*Diagnostic Cultures in Tuberculosis. R. Meller.—p. 387.

Diagnostic Cultures in Tuberculosis.—Meller compared various methods for detection of tubercle bacilli in the urine, sputum and pus. The Löwenstein-Sumiyoshi culture method is superior to examination of slides and at least equal to experimental inoculation. The material is mixed with three parts of 15 per cent sulphuric acid, and is centrifugated. This whole procedure must not last more than fifteen minutes. After this, the sediment is washed three times with sterile physiologic solution of sodium chloride, and glycerol-potato tubes are inoculated with it, after which they are sealed.

Zeitschrift für Urologie, Leipzig

20: 161-240, 1926

Atony of the Ureter. J. Gottlieb.—p. 161.
Device to Control Enuresis. B. Mueller.—p. 165.
Innervation of the Kidneys. E. Lehmann.—p. 167.
Case of Male Genital Tuberculosis. I. Deutsch.—p. 177.
Leukoplakia of Kidney Pelvis. W. Karo.—p. 208.
Irradiation of Exposed Tuberculous Kidney. Rave.—p. 216.
Kinked Ureter. Siedner.—p. 218.
Ureter Stricture. Schmutte.—p. 222.
Stone in a Pseudodiverticulum. Heckenbach.—p. 225.
Tuberculosis of Kidney. A. Barros.—p. 228.
Congenital Atrophy of the Kidney. Stutzin and Libowitz.—p. 229.

Zentralblatt für Chirurgie, Leipzig

53: 833-896 (April 3) 1926

Treatment of Peritonitis. W. Körte.—p. 833.
Diverticula of the Urethra. V. Schmieden.—p. 837.
Surgery of Joints. E. Payr.—p. 842.
Tumors of Lungs. F. Sauerbruch.—p. 852.
*Synovitis of Knee. A. Läwen.—p. 857.
Suture of Crucial Ligament. G. Perthes.—p. 866.
Brain Tumors. N. Guleke.—p. 873.
*Blunders and Dangers in Surgery. E. Hesse.—p. 880.
Hemorrhage in Spite of Ligation of Lingual Arteries. R. Stich.—p. 882.
*Blunders in Surgery of Hernias. R. Stich.—p. 884.
Dangers of Nephrectomy in Paranephritis. W. v. Gaza.—p. 886.
*Blunders in Surgery. G. Perthes.—p. 887.
Surgical Mishaps. W. A. Oppel.—p. 889.
Pseudarthrosis in Pregnancy. H. Tammann.—p. 891.

Synovitis of Knee.—Läwen deals with changes of the synovial membrane in the knee joint. He extirpated the plica synovialis in nineteen cases.

Blunders and Dangers in Surgery.—Hesse introduces a new department of the *Zentralblatt*—devoted to surgical blunders and dangers. The department will accept even anonymous communications, which will be edited by specialists.

Blunders in Surgery of Hernias.—Stich reports a few instances of blunders made in surgical treatment of hernias. In one instance, a piece of the colon wall, 10-12 cm. long, was resected in a case of sliding hernia—having been included in the ligature thrown around the hernial sac—and, what is perhaps still worse, the physician had not inspected the resected portion. The patient died from peritonitis. Retroperitoneal reposition of the hernial contents can be avoided if the surgeon does not omit the correct forceps fixation of the posterior wall of the hernial sac, even if he thinks that he knows all about surgery of hernias. The bladder may be injured, especially if the surgeon tries to make a deep suture.

Blunders in Surgery.—Perthes recalls a case of fracture of the femur below the trochanter which had healed in a right angle with a resulting grave shortening. He intended to make a wedge-shaped osteotomy. The bone was so hard that chiseling was impossible. He used the case to demonstrate the advantage of a new method (boring holes) before another distinguished surgeon who was visiting him. The result was a pseudarthrosis, because the sclerotic bone was unable to produce another callus. The correct method would have been to operate distad from the fracture in the healthy bone. He believes that the presence of the visitor influenced him unfavorably. Thiersch declared once that a good orator must feel a sovereign contempt for his public. This applies also to a good surgeon.

53: 899-976 (April 10) 1926

*Letters of Historical Interest.—p. 899.

Letters of Historical Interest.—This issue is entirely devoted to the reproduction of letters from prominent surgeons from the early days of the foundation of the German Surgical Society, fifty years ago.

Zentralblatt für Gynäkologie, Leipzig

50: 833-976 (April 3) 1926

Fifty Years of the Zentralblatt für Gynäkologie. W. Stoeckel.—p. 834.
*Rectal Versus Vaginal Examination. P. Baumm.—p. 846.
Carcinoma of the Uterus. A. Döderlein.—p. 847.
Lack of Care or of Skill. F. Engelmann.—p. 850.
*Chlorosis and Anemia of Pregnancy. P. Esch.—p. 857.
Carcinoma of the Cervix. L. Fraenkel.—p. 862.
Duration of Pregnancy. O. v. Franqué.—p. 865.
Drainage of Ureter After Operation for Vesicovaginal Fistula. H. Fuchs.—p. 868.
*Retroflexion and Accident. H. Füth.—p. 871.
*Sign of Probable Pregnancy. C. J. Gauss.—p. 875.
Ovaries and Uterine Hemorrhages. M. Henkel.—p. 888.
Treatment of Eclampsia. T. Heynemann.—p. 893.
*Bearing Down Efforts of the Parturient. O. Hoehne.—p. 897.
Tuberculous Contracted Bladder. R. T. v. Jaschke.—p. 901.
Prolapse of Vesical Ureterocele. E. Kehrer.—p. 905.
Collapse After Obstetric Hemorrhage. F. Kermauner.—p. 914.
Minor Gynecology. A. Mayer.—p. 916.
Tuberculosis in Gestation. C. Menge.—p. 921.
Changes in Gynecology. E. Opitz.—p. 928.
Implantation of Ovum. O. Pankow.—p. 932.
Training in Obstetrics. K. Reifferscheid.—p. 936.
*Pfannenstiel's Transverse Incision. O. Sarwey.—p. 940.
Backache. R. Schröder.—p. 947.
The Biliary System in Pregnancy. L. Seitz.—p. 954.
Unilocular Ovarian Cyst. H. Sellheim.—p. 957.
Kielland Forceps. M. Walthard.—p. 961.
Obesity and the Ovaries. H. Wintz.—p. 964.
Fetal Sounds in First Stage of Labor. Zangemeister.—p. 972.

Rectal Versus Vaginal Examination.—Baum investigated in 864 obstetric cases the questions, how often an internal examination is necessary and how often the rectal examination furnishes satisfactory information. Internal examination was comparatively rarely needed—only in about 8 per cent of the cases. In this group, rectal examination failed in 80 per cent—especially with placenta praevia and prolapse of the umbilical cord.

Chlorosis and Anemia of Pregnancy.—Esch reports cases of low color index and erythrocyte count occurring in pregnancy. They differ from pernicious anemia of pregnancy.

Retroflexion and Accident.—Füth regards Raaflaub's sign of recent traumatic retroflexion of the uterus as valuable: Both inguinal regions are tender spontaneously as well as on pressure.

Sign of Probable Pregnancy.—Gauss published in 1920 a modification of Hegar's sign: The cervix presents in the early months of pregnancy an abnormal motility. It may be easily pushed to either side without entailing a corresponding movement of the uterus. He found the sign in 146 of 148 pregnancies (including one in the first and fifty-five in the

second month). The two failures (both in the second month) were corrected ten days later. The phenomenon is comparatively rare outside of pregnancy.

Factors in the Bearing Down Efforts of the Parturient.—Hoehne concludes that the lengthwise stretching of the lower segment of the uterus and of the round and uterosacral ligaments provokes the reflex pressing by the woman in labor. It may be produced experimentally in the later stages of labor by pressure on the perineum by fingers introduced into the vagina, and in earlier stages by lifting up the uterus with both hands. Premature bearing down efforts may cause rupture of the cervix. They should be avoided before the os is completely dilated. Any premature pressing indicates some anomaly in the labor.

Pfannenstiel's Transverse Incision.—Sarwey concludes that Pfannenstiel's transverse incision of the aponeurosis has every advantage over longitudinal incisions in all obstetric and gynecologic laparotomies.

Zentralblatt für innere Medizin, Leipzig

47: 313-328 (April 3) 1926

*Theobromin and Test Diuresis. S. Litzner.—p. 313.

Theobromine and Test Diuresis.—Litzner finds that theobromine sodium salicylate does not inhibit the water test diuresis. If a diuresis test is repeated on two consecutive days, the diuresis is always less on the second—whether the drug is administered or not. If the subject drinks plenty of water and eats salt on the first day, the diuresis is good on the second day.

47: 329-376 (April 10) 1926

Percussion and Auscultation. P. Martini.—p. 329.
*Duodenal Treatment of Cholecystitis. E. Allard.—p. 336.
*Injection of Caffeine into the Cisterna. D. Kulenkampff.—p. 341.
*Blood Chemistry in Blood Diseases. E. Becher.—p. 350.
The Kidneys with Hypertrophy of the Prostate. G. Düttmann.—p. 352.
Roentgen Treatment of Mediastinal Tumors. F. Koch.—p. 353.
*Paravertebral Anesthesia. H. Havlicek.—p. 368.

Duodenal Treatment of Cholecystitis.—Allard advises surgical intervention in cholecystitis, gallstones, or occlusion of the common bile duct, only when duodenal treatment fails. He injects in the evening pituitary extract intramuscularly (to empty the gallbladder), and gives afterward 1 mg. of atropine with some cholagogue. On the next day, he introduces the duodenal tube, and provokes the reflex again. He follows this with injection of 100-300 cc. of a 15 per cent solution of magnesium sulphate. Profuse diarrhea follows, but some of the gallstones may appear in the stool after the second day. The injection brings on a colic which he mitigates by papaverine, atropine or scopolamine. He repeats the treatment every fourth to eighth day. He never witnessed any bad effects in his 200 cases thus treated in the last two and a half years. It is hardly necessary, he adds, to emphasize that empyema of the gallbladder is a contraindication to this treatment.

Injection of Caffeine Into the Cisterna.—Kulenkampff made an Alexander-Adams operation under local anesthesia in a young woman. Thirty-six hours later she stopped breathing. Lobelia and artificial respiration did not seem to help much. An injection of 0.08 cc. of caffeine into the cisterna resuscitated her.

Blood Chemistry in Blood Diseases.—Becher found in pernicious anemia large amounts of phenol and of indican in the blood. Even free phenol may occur. The aminonitrogen is increased—because of the increase in erythrocytes—in polycythemia. The combined and free aminonitrogen is much increased in leukemia. It is localized in the leukocytes.

Paravertebral Anesthesia.—Havlicek describes the technic of paravertebral injections.

Gann, Tokio

19: 1-18 (March) 1926. Foreign Edition

*Production of Tumor Resistance by Fatty Acids. Nakahara.—p. 1.
Changes of Skin in Tarred Mice. M. Kashiwagi.—p. 4.
*Pityrol Sarcoma in Rabbit. Y. Kaneko et al.—p. 5.
*Tumors on Fish. K. Takahashi.—p. 5.
Combined Tumors; Case of Sarcoma plus Carcinoma. M. Koyama.—p. 9.
Mammary Fibro-Adenoma in White Rat. M. Koyama.—p. 9.
*Influence of Cancer on Endocrine Organs in Rats. Toriumi.—p. 10.
Glioplastic Sarcoma in the Fourth Ventricle. T. Fukuda.—p. 13.
*Tumors in Fish. E. Sagawa.—p. 14.
Curiegraphy. Intravenous Injection in Rabbits with Experimental Tumors of Serum Charged with Radium Emanations. K. Itchikawa.—p. 16.

Production of Tumor Resistance by Fatty Acids.—Nakahara's research was summarized in 1925 when published elsewhere (May 16, p. 1526).

Artificial Tumor from Injection of Pityrol.—Metastatic nodules were found in the lungs, kidney and spleen of the same structure as the primary fibromyxo-adenoma which had developed in the mammary gland of one of twelve rabbits injected subcutaneously with pityrol in olive oil, once or twice a month, for fifteen months.

Tumors in Fish.—Takahashi has collected 140 tumors in fishes, including practically all kinds of growths except myomas. Only one instance of a neuroma was found. Tumors containing guanin crystals—his "guanophoromas"—have never been found in warm-blooded animals. Sagawa describes a case of multiple fibromas on the skin of a gold fish, epitheliomas on others, and osteomas in other fishes. None of them seemed to be of parasitic origin.

The Endocrines with Rat Cancers.—Toriumi relates that all the endocrine glands and gonads showed retrogressive changes, but nothing specific for malignant disease.

Russkaia Klinika, Moscow

5: 183-341 (Feb.) 1926. Partial Index

Influence of Roentgen Rays on the Cell. Vail and Liberzon.—p. 183.
*Ulcerative Endocarditis. B. Egoroff.—p. 189.
The Duodenal Tube from Surgical Standpoint. S. Ternovsky.—p. 223.
Roentgen-Ray Diagnosis of Echinococcosis. A. Uspensky.—p. 244.

Pathogenesis of Septic Endocarditis.—Egoroff induced hemorrhagic infarction in the aortic valves of a sheep by injecting crushed blood clots into the jugular vein. It shows, he says, that there were capillaries in the valves, and that the embolus passed through the capillaries of the lung. While in this experiment the embolus caused merely infarction, it is probable that infarction from a bacillary embolus would induce an ulcerative endocarditis analogous to that in man. Septic endocarditis seldom occurs, because vessels in the valves are rare. Their presence is a sign of atavism, entailing the predisposition to ulcerative endocarditis. Development of old valvular lesions into septic endocarditis is due to formation of vessels in the valves, from the previous endocarditis. Mechanical injury of the valve tissue is not indispensable for production of endocarditis. Bacteremia alone does not cause endocarditis unless there are microscopic bacillary emboli in the blood. Only the ulcerative form presents a true infectious endocarditis. Other forms should be called endocardosis, since there is no inflammation of the valves; only changes of toxic origin.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 1037-1156 (March 13) 1926

*Acute Gangrene from Vascular Spasm. R. Finaly.—p. 1038.
Assimilation of Form and Fetalization. S. T. Bok.—p. 1045.
Segmentation of Frog Muscles. S. de Boer.—p. 1053.
*Source of Error in Sugar Tests. C. van Bemmel.—p. 1061.
Dreams of Rhythmic Movements. G. van Rijnberk.—p. 1062.
Fourth Case of Weil's Disease. J. Enneking.—p. 1063.
Gonococcal Process in Spermatic Cord. H. Boshouwers.—p. 1068.

Prolonged Vascular Spasm After Trauma.—Finaly reports three cases of acute gangrene after a bullet wound or contusion; in two it developed in nineteen and twenty-nine hours. The disturbances spread also proximad from the site of the trauma, and the limb was extremely tender above and below, the tenderness stopping proximad at a circular limit. The disturbances subsided spontaneously in one case after removal of the bullet which had bruised the femoral artery. The continuous spasm of the vessels seemed to be a kind of traumatic neurosis in patients under 20.

Error in Urine Test for Sugar.—Van Bemmel found in 5 per cent of a recent hundred subjects that while a positive response was obtained with the Nylander test, on shaking the test tube the sediment dissolved, the reaction thus becoming

negative. The Fehling test had been constantly negative in these cases. He warns that this false positive reaction might prove misleading in patients known to have had glycosuria in the past. Shaking the test tube (1 part Nylander reagent to 10 parts urine and boiling for three minutes) may spare such patients unnecessary diet restrictions.

1: 1261-1368 (March 27) 1926

*Plastic Operation for Dislocation of Shoulder. E. Hustinx.—p. 1262.
*Etiology of Cancer. W. E. Gye.—p. 1268.
A Serologically Different Typhoid Bacillus. Mertens.—p. 1282.
Treatment of Favus with Mineral Oil. M. D. Horst.—p. 1286.
Kidney Calculi in Two Children. S. Simons.—p. 1290.
Elephantiasis of the Vulva. J. A. van Dongen.—p. 1293.

Habitual Dislocation of the Shoulder.—Hustinx gives illustrations of a case in which he operated years ago. They show the absolute restoration of function after correction of paralysis of the deltoid by suturing a flap from the pectoralis to the scapula.

Etiology of Cancer.—Gye brings down to date his arguments for the assumption of an agent from without which serves as the link that connects such widely different tumors as the Rous sarcoma and tar cancer.

Finska Läkaresällskapets Handlingar, Helsingfors

68: 87-183 (Feb.) 1926

*Hereditary Pseudohemophilia. E. A. v. Willebrand.—p. 87.
*Syphilis and the Kidneys. T. W. Tallqvist.—p. 113.
Congenital Intestinal Cyst; Two Cases. A. Gräsbeck.—p. 130.
Erroneous Therapeutic Principles. A. Clopatt.—p. 142.
*Determination of Size of Erythrocytes. E. Gustavson.—p. 152.

Hereditary Pseudohemophilia.—Willebrand describes a family with not less than twenty-three bleeders among the sixty-six members in four generations. The coagulation time was normal, but the bleeding time was extremely long in the grave cases, and the Rumpel-Leede phenomenon was pronounced. The clinical picture resembled that of Weil's disease although certain features differed, suggesting some functional disturbance in the thrombocytes plus a general lesion of the vessel walls. The thrombocytes numbered from 55,000 to 450,000. The eosinophils ranged from 1 to 14 per cent, the lymphocytes from 25.3 to 61.3 per cent, and the neutrophils from 35 to 65.4 per cent. He queries whether this may not represent a new nosologic type of hemorrhagic diathesis. The graver forms were in women and proved fatal in five. None of the male members died from this cause. Transmission seemed to be in the female line. Nineteen cases on record are summarized.

Syphilis and the Kidneys.—Tallqvist found no evidence in twenty-three cases of kidney disease in syphilitics that syphilis could be incriminated for nephritic changes in the kidneys. In nine cases the nephrosclerosis was of a severe progressive type, and the syphilis averaged twenty-seven years' duration. In two cases acute syphilitic nephrosis developed in recent infection; one recovered completely under specific treatment, and the other was much improved but failed to complete the course. Ordinary dietetic-hygienic measures in these cases had had very slight effect. In six chronic nephrosis cases, the syphilis seemed to have been the main factor, and all improved more or less under specific treatment according to the date of the primary infection. Exceptional caution is required in treating syphilis involving the kidneys. The doses should be small to begin with, not over 0.15 Gm. of neoarsphenamine, and the urine frequently supervised.

Size of the Erythrocytes.—Gustavson reproduces the blood findings as estimated by Löwy's method (described in these columns, June 20, 1925, p. 1969). This method may aid the practitioner in detection of pernicious anemia, for example, in an early stage. Diabetic blood takes stains a little differently, and gives a better contrast than normal blood in applying the Löwy method, as Taubmann recently announced.

68: 185-303 (March) 1926

*Superficial Disease of the Cerebellum. F. Leiri.—p. 185.
The Water Metabolism as Influenced by Different Variables. D. Rancken.—p. 203.
Definition of the Psychic Constitution. L. Ringbom.—p. 231.
Chemotherapy in Pulmonary Tuberculosis. J. Grönberg.—p. 246.

Superficial Lesions in the Cerebellum.—Leiri reports two cases of suppuration in the cerebellum of otogenous origin. He emphasizes the diagnostic importance of the premature arrest of the movement in the finger-nose test, the finger stopping 10 cm. short of the goal. This phenomenon he calls the "brake" sign of a shallow cerebellar lesion. Other signs are a positive piano-playing test and the short-step gait.

Hospitalstidende, Copenhagen

69: 121-148 (Feb. 11) 1926

Nystagmus with Otogenous Abscess in Cerebellum. R. Lund.—p. 121.
*Peritonitis from Autoinjection in the Uterus. E. Petersen.—p. 142.

Peritonitis After Intra-Uterine Injection.—The fatal peritonitis developed after auto-injection of soapy water into the nonpregnant uterus of a multipara. The sale of the "mothers' syringe" (long tip that can be used for intra-uterine injection) has been recently forbidden in Denmark.

69: 149-168 (Feb. 18) 1926

*Subarachnoidal Hemorrhage. W. Munck.—p. 149.

Subarachnoidal Hemorrhage. — Munck tabulates under eleven headings nine cases of sudden death from isolated subarachnoid hemorrhage (only two in women) without trauma or known disease. The ages ranged from 14 to 62. The source of the bleeding could not be discovered; the spinal fluid was blood-stained and under high pressure. Signs of external injury and history of violence must be sought before assuming a traumatic origin.

69: 169-196 (Feb. 25) 1926

*Operative Treatment of Incontinence of Urine. Gammeltoft.—p. 169.
Operative Treatment of Ozena. G. V. T. Borries.—p. 184.

Surgical Treatment of Incontinence of Urine.—Gammeltoft reports the successful application of the Goebel-Stoeckel operation in a multipara for incontinence after operations for cystocele, etc. The pyramidalis or rectus muscle is used to make a ring around the urethra.

Ugeskrift for Læger, Copenhagen

88: 261-286 (March 18) 1926

*Metal Salts Therapy. L. E. Walbum.—p. 261. C'cn, p. 298.
*Research on "New Glucose." C. Lundsgaard et al.—p. 272.
*The Insulin Complement. C. Lundsgaard et al.—p. 273.
False Sprue in a Mother and Daughter. G. Schroll.—p. 276.
Immunization with Measles Convalescents' Serum. Mathiesen.—p. 277.
The Dose in Sanocrysin Treatment. T. Begtrup-Hansen.—p. 278.
To Improve Tuberculosis Statistics. Kjer-Petersen.—p. 282.

Metal Salts Therapy.—Walbum's extensive research in this line with fifty different metals has confirmed the principle that the dose must be such as to stimulate production of antibodies while too small to stimulate the growth of bacteria. Combining with a vaccine the optimal dose of one of the few metals which displayed a protective and curative action, he was able to protect guinea-pigs against infection with tubercle bacilli and cure the established disease. The combination of vaccine and metal salt also protected mice against ratin infection, and protected tuberculous guinea-pigs against tuberculin shock. Manganese and beryllium proved most effectual in his experience. He assumes that antibody production is of enzyme nature, and thus can probably be influenced by catalytic phenomena.

Neoglucose. — This report states that there does not seem to be any production of the "new" form of glucose during fermentation of alpha and beta glucose.

The Insulin Complement.—Lundsgaard and his co-workers have found in their further research on the element in muscle tissue which, associated with insulin, transforms alpha and beta glucose into neoglucose, that it is not identical with Meyerhof's muscular coferment. It cannot be obtained from muscle tissue by water extraction, and it does not stand heating to 70 C. for two minutes. As its presence cannot be demonstrated in the juice obtained by pressure from muscle tissue, the insulin complement must be bound to the intact cell structure. It is found in both cold-blooded and warm-blooded animals.